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TRANSACTIONS & STUDIES

of

The College of Physicians of Philadelphia

Volume 40 (Fourth Series)

Number 1 (July 1972)

Prospects for National Health Legislation[1]

By ROBERT J. MYERS, F.S.A., M.A.A.A.[2]

FOR some time now, the sword of Damocles has seemed to be hanging over the heads of the physicians of this country in the form of proposals for national health legislation. A year or so ago, many physicians felt that comprehensive national health insurance was just around the corner and would most certainly be enacted before the presidential election this year. I had never believed this to be the case, and it now seems fairly certain that it will not eventuate.

You will note that I do not use the term "national health *insurance*" to describe all the national health proposals now pending. Specifically, I believe that this label—which seems to be one of wide popular appeal, for some reason or other, and thus is widely used nowadays—should be applied only to describe plans under which virtually all medical care for the entire population is financed through governmental agencies by taxes of one sort or another. Thus, for example, if the Medicare program were expanded to cover persons of all ages, it could truly be called national health insurance. Conversely, proposals which cover just part of the health costs of the population and proposals which provide for the financing of health care largely through private insuring organizations (such as Blue Cross-Blue Shield and insurance companies) are not, by my definition, national health insurance.

Pressures for Legislation

Before turning to the various national health proposals, let me first discuss why I believe that there has recently been so much pressure for legislation in this area.

Probably the most important reason why so many different politicians and groups have developed national health legislative proposals is the influence of the wage and price inflation which we have had in the United States since 1965. People have become very much disturbed about the increase in medical costs—particularly hospitalization costs and physician fees—even though these costs have not risen any more rapidly than could reasonably have been expected from past trends. The human reason behind this is that people just do not like paying higher prices for things that, although they may do great good for them, are not pleasure-giving (such as a new automobile, a color television set or a Miami vacation).

All of us recognize that hospitalization costs, which are the most substantial item

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in the health care expenditures of the country, representing 40% of the total, as against 20% for physician costs, have increased at a much more rapid rate than physician fees. And yet, physicians have frequently borne the brunt of the adverse public criticism, possibly because they are individuals, whereas hospitals are thought of as charitable, non-profit institutions.

Since 1965, physician fees have increased at a rate almost twice as high as the cost of living—and this has brought much adverse criticism—but yet only at about the same rate as wages and salaries generally. However, this was exactly the same situation that prevailed before 1965, but then all three of these economic elements rose much less rapidly. In other words, before 1965, physician fees rose more rapidly than the price level but at about the same rate as wages and salaries generally. Thus, if in 1965, I had been told exactly how much prices and wages would rise in the future, I could have very accurately predicted how much physician fees actually would increase up until now.

Of course, the effect of the wage-price controls recently instituted will have a significant effect on this trend, since—in my opinion, unfortunately and inequitably—physician fee increases are to be held down to the hoped-for maximum rise in general prices (2½%), rather than following the trend of wages, as has been the case in the past. There may, however, be the salutary effect that this strict control on physician fees will lessen any public demand for national health insurance.

Another important element in the pressure that has occurred for national health legislation has been the propaganda efforts of some proponents who talk about the poor health care that is being furnished to the American people. This propaganda effort has, for example, made much of the apparent higher mortality in the United States as compared with a number of other countries. As I have pointed out in my paper, "Philosophies Expounded by Advocates of National Health Insurance" (*New York Medicine,* November 1971), the comparisons made are not valid in many respects, because of such things as differing definitions of live births, differences in ages of mothers, extent of abortions, the more homogeneous social and economic nature of some small countries as compared with the United States, etc.

Furthermore, mortality is not controlled only by medical care but rather, of greater significance, are many other factors, such as racial stock and, perhaps most important of all, life style. After all, one's philosophy can readily be of living life to its fullest for a somewhat shorter period rather than living a long time in a sort of suspended animation state.

Probably the most important thing behind some of the proposals has been an element that is not too widely mentioned. This is a fervent aim, even philosophy, to change the health care delivery system of the country from the present desirably diversified system to a monolithic one based on group practice in large institutions.

Many are the supporters these days of the so-called Health Maintenance Organization approach, which is only a very attractive and appealing way to describe the long-established concept of group practice pre-payment plans. In my opinion, HMO's and GPPP's have certain definite advantages and likewise certain disadvantages. I believe that it would be extremely undesirable if they were the only way in which medical care were delivered. And it is interesting to note that some of the most fervent political supporters of the HMO principle do not themselves belong to one, even though this would well be possible. This seems to be another instance of limousine liberals who espouse integrated public schools and yet send their own children to carefully segregated private schools.

Various National Health Proposals

Let us now consider the various entries in the national health legislation field. This will be done alphabetically, giving a brief description of each plan, its cost, and its likely impact on the medical profession.

The American Hospital Association has developed a general proposal, which it calls the Ameriplan, that would require individuals under age 65 to have private insurance for their basic health protection, with a governmental plan for catastrophic costs. The aged and the medically indigent would be completely protected under governmental plans.

An underlying feature of the AHA proposal would be the virtual requirement that all medical care be furnished by so-called Health Care Corporations, which would be non-profit community-based organizations run essentially by hospitals. Quite obviously, this proposal would have a significant impact on the manner in which medical care is provided and on the practices of physicians.

The AHA proposal was never put into legislative form, although a bill recently introduced by Congressman Ullman (H.R. 14140), which has AHA support, bears certain similarities to it. However, there is no requirement in this bill that all medical care be furnished by Health Care Corporations, although this is strongly encouraged by federal subsidization of 10% of the insurance premium cost when such organizations are used. No cost estimates have been made public for this proposal.

The American Medical Association has offered the Medicredit plan, which is contained in the Fulton-Broyhill Bill (H.R. 4960). The general concept of this proposal is to give credits against personal income taxes for the premium costs of qualified private health insurance plans or policies for persons under age 65. Such tax credits would be a proportion of the premiums paid, varying inversely with income, from 100% for low-income persons to 10% for high-income persons. Actually, because the present medical-expenses deduction could not be used if these tax credits are taken advantage of, the tax credit actually washes out for higher-income persons.

A health insurance policy in order to qualify under the Medicredit proposal would have to provide quite comprehensive protection, including catastrophic coverage, with only relatively small cost-sharing requirements on the part of the individual. The cost of the Medicredit proposal to the Federal Government would be about $14 billion per year initially if it were widely used, as I believe that it would be. There are, however, cost offsets of about $2 billion annually to both the Federal Government and to the States as a result of elimination of the Medicaid program. Interestingly, the Department of Health, Education, and Welfare has set a much lower cost on this proposal (about $8 billion per year). This lower cost resulted under the theory that it would not be widely taken advantage of by middle-income persons.

The Medicredit proposal would have relatively little effect on the manner in which health care is provided, although the AMA has stated that this is a separable issue and that it has certain suggestions in other areas which it makes in other proposals.

The Health Insurance Association of America has sponsored a plan which it calls Healthcare, which is supported by other insurance-business organizations. This proposal has been introduced in the Burleson Bill, H.R. 4960. It would encourage voluntary health insurance on the part of employer-employee plans and voluntary plans for other individuals, as well as State plans for the indigent. The benefit structure of all three of these types of plans would be the same and would ultimately provide a comprehensive range of benefits, which would be phased in over a period of several years in the future. Catastrophic coverage,

however, would not be provided. Employers would be encouraged to upgrade their plans to meet the minimum standards, because otherwise they would not be able to take their entire health insurance costs as business expenses for income tax purposes.

The cost to the Federal Government for the Healthcare proposal would be probably about $8 billion per year, primarily for furnishing protection to indigent persons and for the various planning provisions and loans and grants provisions in the bill. State governments would, however, have cost reductions of about $3 billion annually, due to the larger Federal financial participation in the proposal than under the present Medicaid program. This proposal would have some effect on the manner in which health care is provided, because of its encouragement of ambulatory health centers and HMO's.

Senator Javits has introduced a bill (S. 836), which would, in essence, extend the Medicare program to persons of all ages and would expand the benefit protection provided by including such items as physical examinations, dental care for young people, and out-of-hospital prescription drugs for chronic conditions. The Javits Bill would have a cost to the Federal Government of about $40 billion per year initially and would be financed from payroll taxes and from a government subsidy of one-third of the cost. Much of this cost would reflect a decrease in costs paid directly now through the private sector, and would probably have a very significant effect on physicians, because fees would be determined by the Government since there would no longer be the yardstick of customary and prevailing fees for persons not under the program.

Senator Kennedy has introduced the most sweeping proposal of all in S.2, a plan that was developed by the Committee for National Health Insurance and that is supported by the AFL-CIO. This proposal is also contained in H.R. 22, introduced by Congresswoman Griffiths and Congressman Corman.

In essence, the Kennedy Bill would result in virtually all medical care for persons of all ages being financed through a governmental system under which about 10% of the cost would be met by employee contributions, 40% by employer contributions, and the remainder by a government subsidy. The total cost to the Federal Government would be in the neighborhood of $80 billion per year, so that very sizable tax burdens would be involved. About $20 billion of this Federal cost would be a shifting of expenditures from the present Medicare and Medicaid programs, which would be abolished. It must be remembered, however, that a considerable part of the remainder of the cost would come from a shifting of costs from what is now being done in the private sector.

The proposal is established in such a manner that physicians would virtually be forced into group practice on an institutional basis, since the solo practitioner might well receive little or no income if the anticipated financing is not sufficient. Some supporters of the Kennedy Bill assert that they are not in favor of socialized medicine —in the sense that physicians would become government employees or else employees of organizations which are rather strictly controlled by the Government—but, as I see it, this would inevitably result from the operations of the Kennedy Bill. Quite obviously, the Kennedy plan would have the greatest impact on physicians and would, in my opinion, very drastically change their professional status.

Senator Long, Chairman of the Senate Finance Committee, has for some time favored a purely catastrophic health insurance proposal, financed from payroll taxes applicable to persons under age 65. Such a proposal was added to Social Security legislation in 1970 that was not finally enacted because of lack of time for a conference between the House and Senate on differing

versions of the legislation. The Long proposal would cover, with certain cost-sharing, hospitalization in excess of 60 days per year per person and physician expenses in excess of $2,000 per year per family. This proposal would have an annual cost initially of about $3 billion per year. Its impact on the manner in which medical services are provided would be relatively minimal.

President Nixon has made a very extensive proposal in the national health field, including significant encouragement of the Health Maintenance Organization approach. This proposal is contained in a bill introduced by Senator Bennet (S. 1623) and also in slightly modified form in the Byrnes Bill (H.R. 7741).

Under the Nixon proposal, employers would be required to establish private health insurance plans meeting certain specifications, financed in part by the employees (no more than 25%). In addition, a federally-operated health insurance plan, with somewhat lower benefit protection than would be required under the mandated employer plans, would be provided for low-income families with children. Such a plan would be financed predominantly from general revenues, although with certain cost-sharing payments and with certain premiums being paid by covered persons who are above the lowest-income level, but yet not above the maximum income limit. This proposal would have an annual cost of about $3 billion per year initially insofar as the Federal government is concerned. It would have relatively little impact on the health care delivery system, other than for its very significant encouragement of the HMO approach.

Action on National Health Proposals

The proponents of the various national health proposals discussed above have, of course, attempted to obtain widespread publicity and support for their particular plans. Senator Kennedy has held extensive public hearings on his proposal in various parts of the country, although these can be said to be largely for educational and publicity purposes, since the committee on which he serves does not have responsibility for legislation of this type. The House Ways and Means Committee held extensive hearings last year, with the promise that it would consider the matter further in executive session this year, but to date other pressing business has not made this possible.

Thus, as far as any legislative action being taken, we are at the moment in a period of unusual calm and inaction. It seems extremely unlikely that there is sufficient time in this election year for the Congress to act on any of the extensive national health proposals that have been put before it. This is especially so considering the careful manner in which the two congressional committees with responsibility in this area —the House Ways and Means Committee and the Senate Finance Committee—take action in the Social Security field. It is not at all unlikely that, in the next few months, as the political conventions draw nearer, and then later during the presidential campaign, completely new and extensive proposals may be brought forth. These, however, would be for discussion purposes this year, with action being promised for later.

This is not to say, however, that no legislation in the health care field will be enacted this year. Actually, with very little publicity, a number of significant changes in the Medicare program are contained in a bill (H.R. 1) passed by the House last year and now being actively considered by the Senate Finance Committee.

A number of changes in this bill are for the purpose of tightening up the administration of the existing program and bringing it up to date with changes in economic conditions. The most important change is the extension of the program to some persons below age 65—namely, to disabled Social Security beneficiaries who have been on

the benefit rolls for at least 2 years. This is the first step toward providing Medicare coverage for younger Social Security beneficiaries and, if successful, will probably be extended somewhat more, although not necessarily to the extent of national health insurance for all younger persons.

It is quite possible that Senator Long will add his catastrophic insurance proposal to this pending legislation, at least insofar as the Senate is concerned. There is considerable uncertainty, however, whether it will be accepted by the House conferees on the bill. Although many members of the House seem favorably inclined toward catastrophic insurance, this provision may be stricken out before the final legislation is enacted because the House may feel that it has not had the opportunity of giving adequate consideration thereto.

The issue of catastrophic insurance is an interesting one indeed. There seems to be broad grass-roots support for this approach, and yet many organizations of quite differing natures oppose it. In theory at least, catastrophic insurance is very desirable because one of the basic principles of insurance is to protect against risks that occur infrequently, but that can be of staggering magnitude.

Apparently strangely, the insurance business has opposed the catastrophic approach, on the grounds that any catastrophic plan will be established with limits at such a relatively low level and then that these will later be expanded downward greatly and probably eventually eliminated. As a result, national health insurance will have come about by the back-door method. On the other hand, those favoring national health insurance oppose the catastrophic approach on the grounds that this will take the public pressure off the drive for a comprehensive approach. Quite obviously, although these two views are together in opposition to catastrophic health insurance, the reasons for them are diametrically opposite, and both cannot be correct.

Still others oppose catastrophic health insurance on the grounds that this will tend to encourage the expenditure of excessive amounts of scarce medical services for the few cases involved and thus will make less medical services available for the great majority of the population.

Long-Range Possibilities for National Health Legislation

I have a strong belief that a national health insurance plan would be undesirable for the United States, since I think that it would very likely lower the overall quality and quantity of medical services. As a result, I do not believe that any sweeping proposal of this sort, such as the Kennedy Bill or the Javits Bill, will be enacted in the foreseeable future.

I do believe, however, that in the next few years there will be federal legislation in the national health field. I think that this will be of a type requiring, or at least very strongly encouraging (through tax incentive devices), employers to establish reasonably adequate health insurance plans for their employees through private insuring organizations.

In other words, as I see it, the sensible approach will be taken of building onto the existing system, which is now providing reasonably good health insurance for some 80–85% of the population, rather than tearing it down completely and starting over again, as would national health insurance proposals. Evolution will occur, and will likely be encouraged by legislation, in the methods of delivering health care. Health Maintenance Organizations will grow, in part through governmental encouragement, but they will by no means become the exclusive or even predominant method of delivering health care.

Even though there is such opposition to catastrophic insurance by many experts in the field, it seems that this has strong grass-roots support, and some provisions in this area will very likely be adopted, perhaps

even this year. Much importance, however, should be attached as to whether what is enacted is truly catastrophic insurance and can be of a stable nature, and thus not susceptible to being expanded into virtually comprehensive coverage.

Another area in the health care field that becomes active from time to time is the coverage of out-of-hospital prescription drugs under Medicare or under any type of national health legislation that is enacted. In the past, that subject has had widespread support in the Congress, but action has been deferred because of the huge administrative problems involved and the possible runaway costs. Certainly, the few individuals having high drug costs need some sort of insurance protection, and perhaps this might be accomplished under a catastrophic approach. However, some strong advocates of national health insurance seem to want to make a start in this direction by having benefit coverage of all drugs, with small cost-sharing payments. The result would be the establishment of a huge administrative machine, which could then lay the groundwork for a national health insurance plan.

Those physicians who feared the worst a few years ago may now be breathing a sigh of relief at the almost certain deferral of national health legislation beyond this year and the very likely result that no true national health insurance plan will be enacted. They should not, however, be unaware of the fact that governmental measures have been taken in recent years which have the effect of considerably tightening controls on their freedom to establish fees independently.

At first, the intention of the Medicare program was to pay on the basis of customary and prevailing fees, which any reasonable-minded person would believe would be determined relatively currently. However, as the reimbursement basis for Medicare fees has actually been developed by the Social Security Administration under the continuing leadership of political appointees of the Kennedy-Johnson Administrations, who hold the expansionist philosophy of Social Security, physicians have fared worse and worse. For instance, at the present time, customary and prevailing fees are measured, on the average, with about a 1½-year lag, which is hardly a reasonable interpretation of "customary" and "prevailing." Then on top of this comes the 2½% limit in the wage-price controls, so that there is not, by any means, even full recognition of what has happened to physician charges in the past.

Thus, in summary, rightly or wrongly, physicians are in for difficult days ahead, with the pressure coming from various directions. Even so, there will not likely be the drastic change to national health insurance. Rather, perhaps, a reasonable compromise and evolution will emerge if physicians take an active interest and play an effective role in the continuing public discussion and debate.

The Future of Otolaryngology[1]

By JOHN E. BORDLEY, M.D.[2]

Mr. Chairman, ladies and gentlemen:

It is true that history repeats itself. It was in Philadelphia, early in 1940, that I gave my first scientific paper before a national group. It was, naturally, a time of great stress for me, and had it not been for the thoughtful consideration, kindness and understanding of the chairman, I am quite sure that I could not have got through my presentation. That meeting was the Eastern Section of the Triological Society, and the chairman was George Morrison Coates. To me it was the beginning of a wonderful experience, because Dr. Coates was not only kind to me that day from the chair, but was a considerate and gentle counselor to me for a number of years thereafter. He was one of the great men whose memory I will always cherish. He was, truly, a man for all seasons, a splendid doctor, a man interested in research, an excellent writer and a great leader. To be asked to honor Dr. Coates tonight, indeed, fills my cup.

It was suggested that this evening I touch upon a subject that concerns all of us: the future of otolaryngology. No one can really know the future of any specialty or, for that matter, of anything; but sometimes, in order to envision the future it is wise to review the past. In our case, we have already seen our specialty completely changed in the last thirty years, changed more, probably, than any other specialty in a similar length of time. This was the result of the success of the antibiotics in the control of upper respiratory bacterial infections. Many of us who lived through that period remember the prophecy made by a number of our leading otolaryngologists that otolaryngology would soon disappear as a specialty. Very few of us at that time realized the impact of the surgery then being developed by Lempert or foresaw the advances that would be achieved in maxillofacial surgery as the result of a war. None of us really understood the importance of the research just beginning on the ear, on the larynx and the bronchial tree as the result of new developments in electrophysiology, electron microscopy, microchemistry, fiberoptics, and the operating microscope. Our specialty has changed rapidly in thirty years from one that was oriented to combating infection in the sinuses, in the ears, in the tonsils, and in the cervical glands to surgery for the control of cancer, for the restoration of function and to the new medical treatments to combat diseases in our field. During the past twenty years we have been freed from practicing our old art as "pus surgeons."

Following World War II and the advent of the antibiotics, otolaryngology lost much of its charm for many young doctors. Our training programs fell to such a low ebb that in 1954 only some fifty candidates appeared to qualify before the Boards, a loss of almost two hundred examinees from the peak years before the war. Recruiting house officers became almost impossible. We had nearly reached the point of extinction when it was decided to take a fresh look at the specialty, review its possibilities, and decide what could be done about our future. At this point the National Institute of Neurological Diseases and Blindness put together

[1] George Morrison Coates Memorial Lecture, presented before a joint meeting of the Philadelphia Laryngological Society and the Section on Otolaryngology of The College of Physicians of Philadelphia, 4 April 1972.

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a training committee to review our problems and made funds available to support the development of new training programs.

This was a very important turning point and resulted in what, at the time, were revolutionary changes in our concepts of training. The basic sciences were made an important part of every program. True, there was at that time a basic science course at the Graduate School of Medicine of the University of Pennsylvania, but nine out of the ten programs in this country did not even bow to the basic sciences. Training in general surgery was introduced to the new programs because of the obvious need for more surgical experience, if we were to assume our responsibility in head and neck surgery and maxillofacial surgery. Instruction in the new microsurgery of the temporal bone was added to the curriculum. Audiology, the science that had been developed during World War II, was incorporated into residency training. Clinical and basic research was introduced in many institutions in order to recruit young otolaryngologists into the fields of clinical and basic investigation so that we could attack the unsolved problems of otolaryngology. These changes, which at first were quite unpopular, resulted in a great revival of our specialty, and in a short time most of the programs that had incorporated these new ideas had many more applicants for residency training than they could accommodate.

Otolaryngology, once again, assumed an important role in the medical councils of this country. Teachers, trained in basic sciences, became available to the growing faculties; Ph.D.'s were recruited to work in the laboratories along with Doctors of Medicine. Many faculties became full-time. Clinical and research fellowships for postresidency study became available through the National Institute of Neurological Diseases and Blindness. Best of all, the patients profited greatly by all of these changes.

Today, our training programs are set up to produce young doctors experienced in the basic sciences, in pathology, in the new techniques of radiology, and versed in general, plastic, and head and neck surgery. We now have men specializing in the new techniques of endoscopy, employing flexible instrumentation. The otologist has joined forces with the audiologist, the vestibular laboratory and the radiologist to develop a level of expertise undreamed of even ten years ago.

During the past decade, a number of things have happened that were little noticed at first, but which, in the long run, have played an important role in determining the direction we are travelling today. In the past ten years we have seen the development of the superspecialist in otolaryngology. Our training programs have increased from eighteen months to five or six years in length when one includes a year of general surgical training. Following this training, many people take a year or two years as fellows to perfect their knowledge in the special areas of endoscopy, otology, head and neck surgery, or to take a master's degree in audiology. The thrust has been to develop a man who could compete with the neurologist, the neurosurgeon, the endoscopically oriented chest surgeon, the allergist, the plastic surgeon, and the head and neck surgeon.

Such training was very necessary in the beginning when our new programs and our revised old programs were crying for teachers and researchers to instruct a limited number of trainees. Lately, it has become apparent that we have opted to make only Chiefs and no Indians. We appear to have been over-training many young doctors. Individuals so thoroughly trained can afford to work only in medical centers or highly sophisticated community hospitals. As the programs have increased in size and numbers, it has become more and more apparent that there is appearing a serious limitation in the availability of operative and other types of special material for teaching

advanced types of surgery. We have begun to see the paradox of spreading ourselves too thin in the training programs. The result has been that in a large number of cases our new five- and six-year trainees are not really as strong as they should be, because we have tried to train too many men in too many subjects with too little critical teaching material. At the same time, we have failed to realize the importance of training men for the general practice of otorhinolaryngology. This country needs a yearly supply of young doctors trained in depth to be superspecialists; but one wonders if this country, or any country, can absorb 350 young men each year dedicated to head and neck surgery or, for that matter, to advanced otology or facial plastic surgery. Superspecialists should receive more training than we are giving today and we should train less of them. The great majority of our country's ear, nose and throat problems can be solved at less expense and in the local areas by general otolaryngologists. The Chiefs are beginning to show some weaknesses and the Indians have nearly disappeared.

The future of medicine in this country depends upon the excellence of the delivery of patient care. What has happened around the country to patient care? One can say unequivocally that in the great medical centers otolaryngology offers better care to people today than ever before. In the ghettos, the small cities, the towns and rural areas, however, there has been a rather rapid decline in available patient care by our specialty and, more frightening, the average age of the otolaryngologist in these areas has been steadily rising. Replacements have not become available to fill the increasing vacancies. There has also been a growing discontent among a number of young doctors who feel that they have been overtrained for the kind of otolaryngology required in a general otolaryngological practice. This discontent has been repeatedly spelled out in letters from doctors to The American Council of Otolaryngology. Over and over again one reads such complaints as, "Why did I have to spend five long and expensive years learning to do radical neck surgery, cancer surgery of the head, and complicated middle ear surgery for the restoration of ear function, and the removal of intercranial tumors when what I need here is a firm basis for diagnosis, good training in sinus, septal, mastoid, and tonsil surgery and expertise in laryngology and in foreign body work. I don't see enough big surgical problems to feel secure in operating on them." The truth is that we have failed to prepare doctors to take care of the total population.

What lies ahead? One truly needs a crystal ball. Certain changes that will surely affect our future, however, are already visible. These are not related to great scientific discoveries, such as changed our course in the recent past, but rather to the evolution in the delivery of health care. Our dilemma is not ours alone. Most specialties face similar problems. They are contributing to higher costs through excessive superspecialization and are at the same time withdrawing patient care from the rural areas and ghettos. All of medicine has contributed to those things that are now grouped together and referred to as "the health crisis" by our politicians, our sociologists and our health officials. The "health crisis" is a combination of concerns over the unevenness of the delivery of health care, the high cost of hospitalization, and the high cost of medical care resulting from prolonged expensive training. The high cost of medical education has resulted not only in increasing the cost of medical care but has added greatly to the plight of our modern medical schools.

The "health crisis" affects everyone. Unfortunately, this phrase, "*the health crisis,*" has cast its shadow across the image of medicine in this country today. It has resulted, for the first time in our history, in a public reaction against doctors. We see this illus-

trated in the present, almost phrenetic, activity in Congress where they are preparing health bills and medical manpower bills, and also in the precipitous increase in successful malpractice suits. Many of these rising costs are certainly not the doctors' responsibility. However, the public is unhappy. They are undecided just where to put the blame, but they are demanding that something be done.

Such a crisis is, indeed, inviting to many people on our political scene. It has resulted in activity which might be termed "the great health insurance race." Already there are some eight entries in this field. The front runners would appear to be four: the Labor-sponsored National Health Insurance Bill introduced by Senator Kennedy and Mrs. Griffiths; the AMA Medicredit Bill; the Administration Bill making health insurance available for the indigent through expanded private carriers; and the bill being written by Congressman Mills. These bills vary widely in their aims and in the involvement that they spell out for the Federal government. However, they have the following features in common: 1., guaranteed health care for everyone in the United States; 2., full insurance coverage for those who cannot pay; 3., protection for everyone from the financial stress of what is now classified as catastrophic illness.

As one reviews these bills, one can also see a list of things to worry about. In the most rigorous bill there is a strong indication of the intent to federalize medicine, which could result in the geographical assignment of doctors, the abolition of private fees, and the setting up of civilian watch dog committees to establish standards for patient care and hospitalization. Such committees of non-professionals would review the professional side of health care delivery. The other bills range from strong government supervision of medicine to a moderate modification of the *status quo*.

We have only to read the remarks of a few of the people supporting these bills to get some idea of what might be in store for us. I would like to quote a few remarks from recent speeches by individuals representing each end of the spectrum. From Senator Kennedy I quote, "America's health care system has become so inefficient, so irrational, so inward looking, so inequitable, and so parochial that we can no longer expect that it can reform itself. We must open up this system." Again, "the public interests are not served by asking the sick to pay for the educational component of postgraduate education through higher per diem hospital costs," and, "there should be a requirement that each medical school submit a plan which sets out the ways in which it was carrying out programs in areas which were determined to be responsive to our national need. . . . I know there are those who are upset over such a provision because they believe that it is unwarranted government intrusion. I do not agree. I am persuaded that the education of the men and women, whose *raison d'etre* is the provision of medical services to a society of more than 200,000,000 people, is too important to be left exclusively to your department chairmen, your academic vice presidents for health affairs, etc. This is especially true if you argue, as you quite appropriately have, that your institutions and programs are national, not local resources. Let me tell you the taxpayer in Dayton, in Watts, and in Appalacia should not be expected to subsidize the education of the highest paid professionals in America, who then choose to practice on Park Avenue." It seems only natural, then, that anyone believing in the above statements would feel strongly in favor of federalization of medicine and civilian surveillance of the delivery of health care.

Mr. Mills, whose bill will be introduced shortly, has studied very carefully all of the bills that have been put into the Congressional hopper. He has held long and serious hearings to which he has invited the profession, the paramedical groups, the hospital

administrators and the insurance carriers. He has stated his case as follows: "I believe that we can do it without having to place on the federal bureaucracy the entirely impossible administrative task of managing our entire health complex." And again, "I do not believe in a two level health system, one for the poor and one for the rest of the population, and we will do everything we can to avoid this." Again, "Legislation can effectively support forces for change; it cannot create them. We will need your (the doctors') thoughtful advice on how legislation can best support emerging solutions to the problems." Mr. Mills, obviously, does not wish the government to become the purveyor of health care. He believes in a broad cooperative program.

What is the minimum that we can expect from all of these legislative adventures? The common denominators of the front four bills appear to be: a national plan for insurance against catastrophic illness, total insurance for the poor, established medical standards, and qualification for doctors for each category of medical care in order to receive remuneration for services, a system of review of the medical costs of patient care, and a supervision of the utilization of hospital facilities. All of the bills refer to the unnecessarily high cost of medical care and recommend various methods for reducing the total time and cost of medical training as a method of bringing down some of the overall expense to the patient. All of them speak of the use of paramedical personnel on the health delivery team. The health manpower bill has been passed to encourage increased production of doctors and of paramedical personnel in a shorter period of training.

What do these reactions, these political maneuverings, the anger of our citizens spell out in the redesign of our future? One might also add to this list the unhappiness of a number of young otolaryngologists because of our failure to provide adequate national health coverage. With all these forces at work, one can surmise a number of things, for instance: in the not too distant future many medical degrees will be obtained in a total of five years after high school graduation, just as they are obtained in England and on the Continent today. I can foresee that basic residency training in otolaryngology will be very much shortened and, following this special advanced training, fellowships requiring varying lengths of time will be offered to give the experience and knowledge required when an individual wishes to go into a superspecialty in order to work in a large medical center or to teach. In our specialty I believe a two to three year *core* training, which will permit basic certification in otolaryngology, is a logical way to produce otolaryngologists well trained for general practice, while greatly reducing the costs of their medical education. Such core residency training can be followed, where desired, by fellowship training of from one to three years to obtain superspecialization in head and neck surgery, otology, endoscopy and allergy. Such training will also permit better utilization of precious teaching material. This additional training can be followed by subcertification, in order to meet the standards being set up to qualify doctors for the special areas of our health insurance programs and in order to permit our young men to compete on an equal basis with other specialties offering certification in similar areas. There also will be fellowships available for those wishing to enter research.

Military obligations will be abolished in favor of a volunteer military medical corps. This will be accomplished by utilizing young men recruited from our military academies and supporting their medical education and residency training while they serve as commissioned officers. Perhaps, the military obligation will be replaced by a tour of duty of two years in the Public Health Service for the young doctor completing residency training, in order to cover the needs of our rural areas and the ghettos,

until such time as generalists in the specialties can be prepared to care for these areas. Continuing education will be made mandatory in order to keep up one's qualifications to meet the standards of the health programs. Such continuing education will be evaluated by periodic self-examination or required formal examination. Periodic relicensing may be required for all doctors.

In the future, I visualize a great increase in the number of otolaryngologists in general practice. Some compensatory system will be developed to provide much improved distribution of otolaryngologists in the areas where they are needed. There will be a marked growth in group practice because it has been found that groups actually can see more patients per man, and groups can support paramedical personnel which will spread the professionals even further. Many of these groups will practice in rural areas and the ghettos where they can be mutually supportive. Some of the groups will be in health maintenance organizations. There will be combinations of health insurance available through a federal program and through private carriers. Otolaryngologists will have a choice of total or partial federal subsidy, or private practice.

Standards to qualify a doctor's expertise in special fields will undoubtedly be developed and so will a peer review mechanism. If we have peer review, we have a chance to police our own health care delivery. We also have a chance to minimize malpractice suits. Hopefully, if the present Presidential Commission on Malpractice is successful, we will see malpractice suits settled by review boards.

One cannot help but recognize and agree with the importance of medicine's constantly reviewing itself, constantly trying to improve its ability to deliver health care through research, training and the proper distribution of manpower. This is the way it should be done. The science of medicine is dedicated to the betterment of man's health. It is from such soul-searching and willingness to meet changing needs that the patient will receive improved care. If one looks hard, the future is not dark. We should not fear the future. We should play a major role in making our future. Reading all the signs, we can see change; but, if doctors are thoughtful, cooperative and dedicated, we can make such changes into a real medical renaissance.

Discipline[1]

By FRITZ REDL, PH.D.[2]

I want to start my discussion with one warning and one request. The warning goes to those of you who know me from way back when, when I used to haunt this town about three days every other month to spend the mornings in the schools and the afternoons with the teachers and principals who selected the children for me to discuss. I want to warn you not to admit that you know me from then if you don't want your age known, because it must have been around 1931 or so.

My request goes back to an experience I had at the University of Tübingen in West Germany, where I taught summer school this year, and where after my first lecture three students came up quite militantly and said, "How come you don't like Siegfried Bernfeld?" I said, "Why do you think I don't like Siegfried Bernfeld? I like what he wrote very much, especially as a young person, when he worked on projects for youngsters." They said, "Well, you didn't quote him." I had only forty minutes and I didn't quote anybody. There's just so much that you can say in forty minutes. So please get mad at me for everything I say right now, but don't get mad at me for what I didn't say because I didn't have a chance to.

The topic of "Discipline" obviously goes way beyond what we can tackle in a short meeting like this. Coming from Vienna, I think that in any decent restaurant you should have a menu, so I shall outline what I would like to talk about. Number one is the concept of discipline as compared to the problem of insanity management and riot control. The three are not the same. Item number two is related to the fallacy of corporal punishment, and I hope I have a battle with you on that subject. Number three is the necessity for clean restraint and thoroughly pre-soaked limit-setting. Number four is the new things that have been added on the adolescent scene, and among the things that have been added are the handcuffs of the peer group code, the choreography of the dare (a revival of an old tribal ritual) and group psychological fallout effects for individual interview. As a fifth point, I would just like to leave a few warnings about the problem of complacency.

Defining Discipline

Number one: discipline, insanity management, and riot control. From some of the newscasts and some of the very tragic experiences you have had recently (and every city has had them), I find that often we confuse these things. They do not necessarily belong together. I have the feeling that when something dramatic happens, when somebody kills somebody or there is a riot somewhere, then we suddenly go back and hope we can now belabor the rear ends of little boys and girls and that will take care of it. Or we blame the teachers that maybe the discipline isn't good enough in school. These incidents are usually totally unrelated. The question of how to manage somebody who suddenly breaks down and is obviously insane or killing somebody is not part of the problem of discipline. Obviously discipline has gone out of the window by that time. These are entirely different problems.

Also, an invasion of the school premises because of social unrest of the community is not the same thing as discipline. Dis-

[1] Delivered 11 November 1971 at the 20th Annual Meeting of the Mental Health Association of Southeastern Pennsylvania, transcribed from a tape recording.

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cipline problems are well-known and we could spend a lot of time on them (and I'll mention a few), but this phenomenon only looks similar. They are not the same phenomena. Among the many major reasons why youngsters become violent I'll mention only one, which is a different one from the usual ones, namely, what I would call extraterritorial detonation. If I'm in a community and I want to raise trouble somewhere, I pick myself a school kid and put a bomb in his satchel and toss him in a classroom. If that explodes it's a mess, but it has nothing to do with the teacher and it has nothing to do with the kids, has nothing to do with how miserable or how good the curriculum was. It may have been bad and we all chew our fingernails that maybe it was our fault, but it has nothing to do with that. It's an entirely different phenomenon. It is the explosion, which is quite different from other forms of rebellion of the kids in the classroom.

In short, I will want to remind ourselves to use our logic a little bit and separate the problems. The problems of discipline in the classroom in the school are big enough, but we must not confuse them with equally big problems which are the result of the crumbling of somebody's personality, of individual violence, or of an organized or a sudden disorganized riot. These are entirely different problems. Each one is a problem in its own right.

We all are quite liberal in using one word, "discipline," for many meanings. First of all, we mean by "discipline" a certain type of situation of orderliness within a group, so that most of the behavior of most of the people is in line with the purpose which the group has, and they control contrary impulses reasonably well, either because of some regulation from without or some identification with that order from within.

A second thing which we sometimes mean by "discipline" is when we say Bobby is or isn't disciplined. Then we're not talking about a group. We are talking about the dominance of Bobby's control system over his impulses; under what conditions does he and under what conditions does he not have control over those impulses which may be perfectly all right but do not fit the given situation; and under which point can he really make himself do this or that even though his inclination in that direction at the moment may not be so strong.

A third use of the word "discipline" is the word "to discipline." The moment people say, "I have to discipline him," they're not talking about establishing order, maintaining it, or incorporating it; they're talking about punishment. So why lie? Why don't we say punishment. There's nothing wrong with punishment. It is an equally relevant problem, but let's not say that "to discipline" means "to punish" because then it looks as though to develop discipline would automatically be dependent on your penalty system, while this is really the last crutch which you may need. But it's the last crutch and not the most important one for it.

Then, of course, we also talk about the "discipline case," which is a misnomer, because in the case of a discipline case the thing called "discipline" obviously has long gone out of the window, or we wouldn't have a discipline case. You see, the word itself, linguistically speaking, is interesting. You can use the word any way you like, but remember which meaning you have in mind.

Corporal Punishment

My second issue is the fallacy of corporal punishment. I have two reasons for calling it a fallacy. Number one is a philosophical one. There is no research at all which proves that the best entrance into the soul, the heart, or the mind of the child leads through the epidermis surrounding the anal region. There is no such evidence. I think it is a total perverse concept of education. It is true that occasionally people re-

member experiences of punishment and believe them to be the cause of why they become righteous and nice persons. What a deception! You need not agree with me on that. This is only a philosophical argument.

A second argument is that corporal punishment is at the moment totally obsolete. In our society which is highly technological, in which we operate schools in huge cities with terrific crowding of lots of people into one place, this weapon, which at one time may have made some sense, is totally obsolete.

The use of corporal punishment in the school systems and in the societies we now live in is totally obsolete. I have no objection if you put it in a historical museum. Whatever you do with knuckles or paddles is not enough to repair any of the things which you now complain about, in the events which upset you when you read them in the newspaper.

Limit-Setting

Item three is the necessity of clean restraint and of thoroughly pre-soaked limit-setting. What do I mean by "clean restraint?" While I fight against the concept of corporal punishment and some other idiotic forms of punishment, I do not want to be quoted as being in favor of permissiveness. On the contrary, it is especially important that if youngsters have trouble with organization and control that the limits are clearly set, that they also are set in a clean way. And by clean I mean now something very special.

I have a friend who is a neurosurgeon and he's from a very fine family and is very clean. When he comes to a party he could talk with the president and he would be clean enough for that. But before he operates he still washes his hands. He's not clean enough for the operating room; he's clean enough for the party with the president.

The same thing is true for our classroom procedures. Much of what we do when we interfere with a youngster who is upset or with a bunch of kids who are acting as though they were a bunch of adults in somebody else's town may not be clean enough for handling the situation. By clean I mean a variety of things:

1. No personal rage can be permitted in the situation.
2. No implicit casting aspersion on friends, family, caste, class, religion, about what kind of people are you anyway? Do you think you can do that here? That's all dirt—it gets into the wound and messes it up.
3. No special hurt—or no glee that you finally got a little bit of revenge.
4. Careful timing. In timing we make the most frequent mistakes with most punishment.
5. And, of course, no exposure to unnecessary secondary frustration, which gets the kids simply madder, more upset, or more disorganized than they were before.

That's what I mean by clean.

Even direct physical restraint may sometimes be necessary. If a kid runs after another with a knife, I'll sit on him if I have to. The implication is "this I will not let you do. Everything else can be talked about some other time. It's not the issue, if it's good or bad, or are you good or bad. That's not the point. Right now we will stop you from doing it." And we better also be powerful enough to stop him from doing it; otherwise the kid gets scared.

Much of the rebellion of adolescents comes from their fear of their own impulsivity and their wish that somebody would draw the line somewhere, because they can't afford to do it themselves. Many a household situation is like that. For example, Mary is supposed to go to that late party where you don't want her to go. She's scared anyway. She wishes somebody would say no. She can't say no; they would call her a sissy. So she hopes you will say no. Then, of course, she can say, "My mother is an old

fogey. She never understands me." But at least she doesn't have to go.

Limit-setting is important. Rather than being too punitive we sometimes become punitive in a silly way or too unclear in our limit-setting. The clarity of limit-setting and the cleanliness of it is of great importance.

I used the words "and heavily pre-soaked." But pre-soaked in what? This expression comes from cooking where you have to pre-soak something for a couple of days before it is really ready. By "pre-soaked" I mean my behavior must be soaked in the right message; and here I find the most frequent mistakes, even in children's psychiatric units, which otherwise well-trained people make. The message has to be the right one. Illustration: If I have to bounce Bobby out of the classroom, the message is not, "I want you out." The message is, "I want you here, but I cannot let you act that way here; so I hope you are back as fast as can be." And the person to whom I bounce him, if I'm lucky enough to have somebody very liberal which I have to have or else the whole thing is a mess, will stay with him until he comes down again and will wait for the moment to say, "I know the teacher wants you back; maybe now we can try it again."

Somebody now has to be with that kid; somebody has to do something. You can't bounce him into nothing. You have to bounce him into something. And here comes the big problem. Don't get mad at the teacher or principal who sometimes bounces a kid. Raise the question: Have we available what the youngster needs to be bounced into and is the message, "We only want you there now because of what you are doing now or because you're too upset, but we want you back in this activity."

Even in some psychiatric wards they have extremely explosive and dangerous children. They may have to put them into the so-called quiet room. The message is, "If you act that way we have to have you in there, but we hope as soon as you can relax we can have you back in the game again. We don't want you in that room. We want you with us."

You can be bouncing somebody and still convey the message that they're wanted. In fact, I remember some kids we had in some of our projects who never got the idea that we wanted them until we bounced them with the right kind of message. And that message is hard to produce, obviously, because by the time I have to bounce Johnny I may be upset and if my group is too large I can't afford to be calm and relaxed; and if I have nobody to bounce him into what do I do to begin with? We have not provided enough services which are good receptacles for somebody who is now too upset to act correctly, but the message is, "We will not let you do this, and if you do, somebody will take care of you who won't let you do it, but the moment you are out of it, the moment you don't have to act that way, thank God, here you belong, and we want you here. We want you in the activity and not out of it." It is the ability to produce that message, which is an essential aspect of building up the child. The word "exclude" is wrong. I think it's really an inclusional policy. Include him in something else temporarily, so that he can be back again; because he also has to be included in something, even if it's a relationship to somebody or a place where he can relax.

Many of the practical problems in daily life in school (where the poor principal frequently is made the flunkey of the classroom teacher and has a whole host of people sitting there cooling off because somebody has to talk with them but there is no place to be really helpful to them) have to do with the practical problem of implementation. Do you have the chance, the opportunity to make a constructive experience out of a temporary exclusion, or whatever you call it, or is it simply an automatic self-defense and then you don't care what happens to the youngster and the youngster

gets your message when he's thrown out that way?

We need something like a crisis team in those schools where there are lots of youngsters with heavy upsets, and this crisis team needs to be available right now—not some other time, next Wednesday or so, but right now. And if I have to bounce the youngster for more than a short time, somebody ought to figure out immediately what is happening, what do we do with him, what else can be done with him, and how we can get him back, and how he can know that we want him back rather than want him out.

It is not a cheap arrangement and you cannot at the same time leave your schools as unimplemented as you leave them and at the same time expect the service which you recommend.

Adolescent Novelties

Number four: some new things have been added on the adolescent scene and I want to mention some of them. They are not entirely new, but they have hit us more heavily than we were used to for the last ten years or so.

One of the things that is new is that some of the best kids are now doing things which we otherwise expect only from youngsters who are obviously miserable, mistreated, ill-equipped, and so forth. Much of the great violence is frequently done by otherwise pretty-well-put-together kids. They are not all crazy. Most of the time they're even quite peaceful. All of a sudden they have to have one terrific rebellious act—throw a bomb or something—and this is quite different from the youngster who is simply disorganized or who is hostile or doesn't know what to do with his aggression.

I also find that we have trouble with our original model, that we always assume the whole problem is that Bobby's impulsivity gets too high and then his controls can't take care of it, or he does or does not have a good super-ego or value system. This is still true. But, you know, when Freud developed the concept of super-ego, we didn't have cassettes, the kind of tape players. Those tape players are wonderful; after one cassette plays you take it out and put another one in and it plays an entirely different tune. Some youngsters are that way. They are not really suddenly different people. What crawls out of them isn't even their bad part; it is suddenly playing a different tune because the group psychological cassette is inserted. And we have not paid enough attention to how easy it is very frequently to have a youngster react to what the group expects of him and not to his private value system. His private value system is still intact, but he'd rather be dead than not do what the group does.

Let me give you a few illustrations. I call this group expectation "the handcuffs of the peer group code." Peer group is the group of other kids. But here we have a surprise: it is not always the other kids the youngster lives with. The reference group on the basis of whose value system I behave as an adolescent is frequently not even in the room. It is usually adolescents who are at least three years older and more developed than I. It is usually adolescents who are much more sophisticated than I, and adolescents who are ten times more unbearable than my parents would ever allow in my basement. Those are the people I would be scared to have not think I'm a regular guy. I'd rather be dead than be called a sissy.

I know a number of youngsters who now are dead rather than be called sissies. They were excellent drivers, they were very well organized kids, they drove much better than their parents ever will (I know their parents too), but when three other kids in the same car said, "What's the matter with you? Chicken?" they had to get reckless in their driving. And they're dead.

This is the point I'm making. These kids did not lose their personalities. They did not lose their value systems. But their personal value systems were knocked out and

the group psychological cassette of the peer group was pushed in and you know the rest.

This always was so, and with some really tough delinquent kids we were used to it, but now we find this over-dependency on the peer group code with many more youngsters than before. This over-dependency goes so far that we make another mistake. We call many youngsters who are hard on us because of it "rebellious." We could use thousands more rebels in any city; we don't have many rebels. These kids are slavishly dependent on the peer group code. There are very few rebels around. They throw stones or they break a window or they attack a teacher because they need to establish their rep with the rest of the group. They'd rather be dead than not show that they have the guts to do this. This is slavish dependence on the peer group code while they do it and not independence for an individual act.

There is a diagnostic differential between the youngster who really has enough guts to rebel and the youngster whose cowardly dependence on the peer group code is so great that he would rather do what he would feel guilty for than not oblige. Fashion dependency is something we're all familiar with in adults, but the kids have dependency now in an area which we previously did not see.

That's another reason why the good old method of belaboring the rear end in order to do something up here (in the head) is out again. Even though it's painful and unpleasant, the adolescent doesn't see it as an unpleasant experience. On the contrary, it heroifies him and makes him special: "I can take the risk now so as to prove to the rest of the group I'm not chickening out." To prove group loyalty he has to become a victim of the enemy, and this is the most wonderful and dramatic way. The kind teacher doesn't give him the chance, so that's why he provokes him until he finally goes after you. Then he can proudly say, "You see, I don't take no nonsense from nobody."

The second point I want to illustrate is what I call "the choreography of the dare," which is a well-known phenomenon among feuding tribes and was well known in the Germany of the last century, where there is a given dueling code. If I am sitting with a girl in a beer garden and you want to raise a fight, you come over and say, "Don't stare at me." Then I say, "I didn't stare at you." Then you call me a liar, and once you call me a liar the code comes in. From then we are not two people any more; we are two puppets on a string of a socio-drama and we now have to go through the rest of the motions. We have to shoot it out if it's a shooting fraternity, and one of us will be dead—so what—the other one either gets to the United States fast if his father has money—if not, he spends a little while in jail and then he gets out because some old member of the fraternity says, "After all, it was only a passion, an honor killing and it wasn't a real one, so it's okay."

This is a peculiar ritual, and now I find that even kids who previously were not caught in the ritual are now sometimes caught in the ritual, and the great difficulty for us as teachers is to smell the difference, whether what is now happening is Bobby's personal misbehavior rebellion or is it that ritual, the dance of the dare. If I say, "Bobby, you make such a racket; sit it out for a while and come in when you are all right again," and Bobby says, "All right, make me;" then, this becomes a ritual. Now his friends are watching and the question is whether he will chicken out. And now all of a sudden the two of us have to fight it out. He has to take away the time from the poor principal who already has fifteen kids sitting up there, and I have to do either this or that. We have nothing against each other. He knows me—I know him—we basically are relatively harmless. If he is a tough kid, he doesn't have to do that because he knows he's tough enough. If he is

not tough enough, he has to prove to the other kids that he can take some risks, because risk-taking is honorable, and so he sucks me into this choreography of the dare. Once dared, he has to do certain things.

This dare thing, however, is like all primitive tribal rituals, a very limited societal arrangement, and depends on what is considered a dare. Unless you belong to one of those special dare groups, you don't feel dishonored just because you say "I don't want to fight you right now." But if you are in the dare business, then you are dishonored. I am not saying that you can never bounce a kid, or not saying that it may not happen that the kid really says "make me" and you had better make him. I'm not saying that. It all depends on the details. For example, I'd like to know if there is an ordinary individual problem between me and Bobby, or has it suddenly become a societal scene where we are both puppets of something which has to be played through to the bitter end, where all the other things that happened are totally wasted.

Occasionally such rituals are unavoidable. Clans of tough kids always have had them. But now I find kids who live rather peaceful civilian lives suddenly sucked into the dare business. (By the way, even in the bosom of the family, it happens sometimes that you suddenly feel, "I cannot let Junior talk to me like that." You are not his father any more and he is not your child any more. The rest of the adults look at you to save the honor of adults versus the youth.) It is difficult not to be sucked into this tribal ritual but rather to handle a problem realistically. Realistically may mean either saying, "Cool off and sit down and we'll talk about it later" or maybe it may mean bouncing him if necessary. It depends on the circumstances. But whether it is necessary or whether it simply follows the blind ritual of the general societal fashion of the 1970s or '60s is a topic of great importance.

Many discipline problems become discipline cases primarily because we are not watching enough for the switch from an interpersonal interaction in handling of the kid to the ritual, and especially if a whole group of kids wants the ritual, it will be hard for us not to fall into that trap.

A third phenomenon in adolescents is "the group psychological fallout effect." I find that problem among teachers who like to talk with kids alone after school, with school counselors or psychiatrists who work with kids of school age. Originally we assumed (and that's how we are trained) that if we are two people in the room, it is not a group, but just two people, a one-to-one situation. Huh! Sometimes. Our privacy is destroyed by the fallout effect of group psychology.

For example, I may be alone with a kid, as I often am at the camp for delinquent children. His stolen loot is hanging out of his pocket. I know. He knows. He knows that I know. He knows that I will be relatively harmless, but he still has to lie five times before he can let me have it. First of all, he says, "Honest to God, Fritz, I'll swear on a stack of Bibles I wasn't even there." Then we have to go through that ritual, and finally he says, "All right, here it is." Occasionally I invite his group in because even the group gets impatient and says, "Come on, skip the last lie and tell him, because we want to go swimming."

What I'm talking about now is not a peer situation. This is a group psychological situation. Many an adolescent sits in your room and the reference group sits in it too. They are like invisible companions. It isn't even a real group, but the idea is, "What would my group say now if I don't play it right with the representative of the enemy group?" Very often what you get is not personal resistance, but personal lack of confidence. Teachers who like kids and who sacrifice a lot are terribly hurt by that. You like that kid and you were so nice to him; why is he so obstreperous? He treats you as though you are his enemy. He knows you

are not the enemy, but he can't help it. Right now, his group is looking over his shoulder, and he carries himself the way he is supposed to carry himself when he is confronted with anybody over thirty or anybody who is representative of the establishment, or its flunky, or its appointed shrink.

Complacency Among Teachers

My last word is a warning against complacency. I think we have a tendency to be too naive about implementation facilities we need. I have heard some wonderful suggestions for halfway houses and such institutions, but these things don't come just because we describe them. Most of our facilities are already not enough, or certainly not enough for the number of problems, and this is worldwide, the same in Europe as here. The question of what we need is clear, but we must not fool ourselves that just by defining our needs we have filled them. The fight to get our plans implemented, our fight against despair, has to be stepped up. As teachers we have been much too long too complacent.

When I came to this country in 1935, everybody already knew that many classrooms were too large. We are still at the same point, more or less. If many kids had small classrooms before they get crazy enough to get assigned to a small one they wouldn't be that crazy. We all know that, but nothing much has changed.

The final point I want to make, and which frightens me is that the moment something dramatic happens—somebody burns up the schoolhouse or somebody gets hurt—then all of a sudden everybody uses the kids for something else. I have noticed it also with the drug issue. In a convention when people talk about drugs and juveniles, everybody brings his own philosophy and uses the fact that the kids should be protected from drugs to say whatever they think is good education, and so on. We really only use the kid as a jumping off point; we use the kids as gadgets to fight our own brawls with. Suddenly we are for permissiveness or against it, or this or that, and prove it by this or that kid, which is totally irrelevant, because this is not the issue. Let's not use the kid to fight for our philosophical, religious or psychological opinions. Let's ask the question: what do kids need and how can we come close to providing it as soon as we can?

Teaching the History of Medicine—New Approaches[1]

By ALBERT S. LYONS, M.D.[2]

Introductory Remarks

I WISH to start by saying that I am here under false pretenses in two respects. When I received the invitation to give the Kate Hurd Mead Lecture, I spoke by telephone to the clerk of the Section on Medical History, Dr. Vaughn Simmons, and told him that I did not have the scholarly standing of the previous distinguished lecturers, all of whom were outstanding names in historiography. I did this not in modesty, but rather out of a sense of propriety. I finally decided to accept the invitation when I realized that the burning issue was not scholarship but teaching; not investigation, as important as that is, but the introduction of the History of Medicine into the training program of the physician. As a practising and teaching surgeon, increasingly occupied with history, I would symbolize the controversy centering around the teaching of history and perhaps could help to influence the administrations and faculties to include history as an essential part of medical education.

The second misleading pretense is the title. The new approaches are not all new. Many of the ideas I will express have had long histories. The only innovation is in bringing them together in a comprehensive view with the hope of persuading ourselves as well as others that history can be taught so that it is an integral part of medical thought and practice. Certainly more imaginative solutions will be suggested in the future by others. What I offer is an invitation to action.

New Approaches

That some new approach to the teaching of the History of Medicine is necessary can be readily seen by reading Genevieve Miller's extensive survey of the teaching of medical history in the United States and Canada (1). One is struck by the merely peripheral interest in history shown by medical school deans and faculties. One may also note the frequency of the use of history clubs, usually in extracurricular hours, sometimes as the only history available to the students. These are surely to be applauded and supported in every way possible. Indeed the Johns Hopkins Hospital Historical Club was the forerunner of the great Johns Hopkins Institute of the History of Medicine. In other schools afterward and today, clubs have been an important attachment to history. But in essence the presence of these clubs really begs the question. They exist chiefly because history is not considered important enough to be included in the curriculum. It is ironic that, at a time when sociological and political considerations affect teaching so vitally, the study which can help the student to understand how the present came to be what it is has been relegated to a minor position or omitted altogether.

Lack of interest in the history of science was not always so noticeable. Allan Debus has reported that in the nineteenth century William Henry felt obliged to give reasons for not including history in the text that he proposed to write on chemistry (2).

F. J. Moore in 1939 stated, "The value of

[1] Kate Hurd Mead Lecture XXIII, The College of Physicians of Philadelphia, 22 March 1972.

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the historical method for studying every department of human thought is now so universally recognized that it requires no emphasis." Whether it was actually true then, it is certainly not so in medical education today. Dr. Miller made the observation that when the history of medicine was used in a school, it usually arose out of the interest of an individual faculty member who would volunteer or would establish a club.

Henry Sigerist was optimistic about the future of the History of Medicine because of the quantitative evidence of its increasing presence in the curricula and in the numbers of instructors (3). However, the courses were actually few and of little importance. Dr. Miller in her conclusions indicated that competent historians in medicine had increased, graduate departments had multiplied, and more full-time historians were being supported by school budgets. Yet, she recognized that "the impact and influence of historians are slight." Thus, it is not chairs or professional historians in number, nor is it even library collections, although they certainly help, that lead to interest *in* history and influence *by* history. For this to occur, a faculty, as well as an administration, has to be convinced that the history of medicine is important to the student's training. And the student has to perceive and receive the contribution of history to his knowledge and thinking. New approaches of some kind are in order or our physicians in the future will be missing the inspiring, ennobling and healthfully humiliating experience which history can offer.

We must ask ourselves: why should history be taught? what should be taught? how should it be taught? by whom should it be taught?

Why Study or Teach the History of Medicine?

Eugene Cordell, Professor of the History of Medicine in Maryland in 1904, summarized the arguments so well that they stand convincingly today (4). Using my own categories, I offer the following advantages in studying the History of Medicine:

1. Helps to understand the present and anticipate the future. For example, the modern methods of gastric surgery can only be understood, as contrasted with being merely memorized, by learning the details of their historical development.

2. Instills humility regarding present knowledge and provides inspiration from the lives of others, but also develops an appreciation of one's own worth. In history, failures have often preceded successes. Brilliant advances have often been made by ordinary people, not supermen, with the weaknesses of fallible humans. All of us can thereby know that we too can be great achievers.

3. Develops objectivity by recognizing the pitfalls in evaluating former knowledge; by learning the errors and misunderstandings of the past; by realizing that today's therapy is tomorrow's folly—that treatment is opinion, not fact. Even facts turn out to be only views.

4. Demonstrates the changing position of medicine and the physician in society. What has happened to the physician has been less dependent on what he and his group have done than on what society has determined.

5. Enables the reception of new ideas from old contributions and the understanding of how discoveries and ideas have come to be effective. William Harvey's proofs of the circulation of the blood were accepted and followed because the soil was propitious. Hero of Alexandria invented the steam engine, but neither the thinking nor the needs of the time permitted the concept to be either appreciated or used.

If these advantages are believed, then the History of Medicine should be an essential part of the training of the physician.

What Should be Taught?

The competition for time in the curriculum of the modern medical school necessarily requires courses on the History of Medicine to fall far back or to be lost altogether. As the subject has been taught in the past, with respect to both content and format, the student and indeed the faculty as well, usually can find little to warrant its insertion into the already crowded hours. The chief reason is that history does not appear to be germane to the acquisition of the extensive information needed by the student, nor to his later practice, nor to his career in research.

On the other hand, virtually everyone who publishes a medical paper begins by mentioning the earliest reports on the subject and does his best to describe past developments in order to place his own work in proper perspective. Medical history in this context is seen by all to be of obvious value, but it is not usually recognized as medical history. Historians too sometimes overlook the use of critical reviews and surveys in acquiring a knowledge of history.

The vast amount of medical information to be imparted in a limited time period has too frequently resulted in a restricted view rather than in the seeing of medical knowledge as a flow from past to present to future. But the subject matter taught must be of clear and present use, and the methods must involve the student in active participation, or else the courses will slide into vacuous curiosities—at best interesting only to a few history "buffs" among the student body, a prideful adornment of the catalogue to show that the students are exposed to "culture," and a mild entertainment occasionally when the lecturer is an unusually forceful and talented speaker.

It would be important, for instance, to present a detailed survey of contributions leading to understanding the nature and treatment of hyperparathyroidism; or an inquiry into how the present myriad operations for peptic ulcer came into being, with their past and present rationales, so that the student can realize their current uses and limitations; or a study of the medical attitudes toward tuberculosis as a disease entity, including the former methods of treatment and the changing concepts. The course should include the history of the technical features and of the details of investigation, diagnosis, and therapy (the false directions as well as the successful outcomes) in as many disease entities as is possible, within the limitations of time and personnel.

However, it is also essential for an educated student, to say nothing of a medical teacher, to know how the present position of the physician was arrived at; the experiences of the past concerning the changing attitudes toward malpractice; how medical schools became what they are today (with the view of where they seem to be going). The practitioner, too, surely can better evaluate and either favor or oppose present methods of certification and specialization, if he has learned the evolution of the medical societies, boards, and quasi-governmental bodies which pass on his competence and methods. Certainly those who are concerned with the sociological aspects of health care would do well to have an historical perspective on the economics and the politics of both the profession and the governmental health agencies. These are examples of the subjects that would be in the syllabus. But in my view the so-called "literature" in each technical subject would be the chief, though not the exclusive, basis for teaching the History of Medicine.

The topics bearing directly on the present knowledge of specific disease states and therapeutic procedures (which can be called "specific history"), should co-exist with information explaining the political, economic and social patterns in health and disease (which one can refer to as "general history"). However, recent history in most instances will have to be accented. Ancient

history is not abandoned but its useful proportion in the syllabus has to be assessed properly. Furthermore, although antiquarianism can be rewarding to the collector and provocative to investigating scholars, it has only a peripheral place in the teaching and should not be the goal. When used judiciously, it can be a spice; it should not be the main sustenance.

Is this emphasis on the recent past a "sell-out" to popularism, an affront to scholarship? In my view, it is rather a means of persuasion—not only of the students but also of a large proportion of the faculty, who look upon the History of Medicine as either dilettantism or a minor, irrelevant exercise. Until one is admitted into the mysteries of the study of history, one can never know its scholarly satisfactions, nor its intellectual delights, even though the original recruitment may have dangled merely the glossy, material reward of "relevance."

How Should the Subject Be Taught?

Virtually all courses in the History of Medicine consist principally of a series of lectures—from a few to a modest number. I have no animus against lectures. Far from it, else would I be here at all? Some kinds of facts and opinions are best organized and offered by the lecture. But it does represent a limited type of presentation of information and ideas. As the chief method of teaching, it belongs to the past.

There are, of course, other methods known to all which can give more stimulation and develop better learning patterns under appropriate circumstances. The seminar is one of these—although it is more often a euphemistic term for lecture followed by questions (and I include myself among those who have been derelict), rather than a true interchange for which all participants, including the students, have to prepare beforehand. Demonstrations and exhibits also have real value if they are used directly in the process of lecture, seminar, discussion, or study. For instance, the exhibits in the Mütter Museum in this building, under the Curatorship of Elizabeth Moyer, make up an extraordinarily versatile collection. For the most part, however, I have noticed that those who prepare displays seem to be the only ones to benefit from the occupation. Sometimes a lecturer does not even mention the exhibit which bears on the topic that he is discussing. The key, of course, to the effectiveness of any method of teaching is active involvement by the student, whether it is by composing a paper, giving a report, preparing for a discussion or even just reading.

I would like to mention here that full use of technological advances have often made a dull presentation lively. All of us take for granted mechanical devices that revolutionized not only teaching and learning, but also our economics, politics, culture and mores—for example, the camera and the lantern slide projector. Another to which I wish to allude is the tape recorder and related devices, which have opened up a new kind of information gathering. When I first became the archivist at the Mount Sinai Medical Center, I thought I had an original idea in tape recording interviews with retired members of the staff and newly appointed officials, and also in recording significant meetings and events, so that historians in the subsequent century would have some ideas of what these men were like and what ideas were current back in the mid-twentieth century. Of course, Columbia University in the person of Allan Nevins and his associates, notably Louis Starr and Elizabeth Mason, had been doing this for fifteen years. Nevins called this method "oral history." It has become a recognized technique for obtaining information of historical importance in all disciplines.

This method can also include as historical information the ideas, the speech and the personalities of the common man, not just the outstanding great individuals. According to Marshall McLuhan, the medium

determines to a large extent the content. I think that this thesis is valid in relation to the gathering of information by the tape recorder. I am not speaking of the recorder simply as a substitute for appearing in person, by taping lectures and then presenting them by playing the machine. If one does that, surely the students will also have recorders which will not need *their* presence and which can be placed in the auditorium with their receiving microphones pointed toward the speaking machine. I speak rather of the recorder used to obtain historical information that cannot be gotten in any other way.

What can be gained by the "oral history technique"?

1. Intimate details of biography. For instance, a world-renowned gynecologist who invented a procedure which became famous, was unable to get a hearing at first because of prejudices against him. One of the important contributors to knowledge in pulmonary pathology confessed to me in an interview during the last days of his life that he had made a terrible mistake in leaving his original institution in pique because he was not offered enough support. It explained some of his subsequent actions. The pathos in his voice and the humility in the words of this proud, elegant and confident man are impossible to appreciate except by listening to the tape.

2. One can follow the details of reasoning that led to a discovery, an invention, or a significant report; one can learn the influences which were brought to bear on an achievement.

For instance, a new clinico-pathologic entity was described about 40 years ago. Interviews with each of those involved, as well as with others who knew the intimate story of the investigation, have produced a variety of interpretations concerning priorities and the nature of the events preceding and following the published report. This, of course, is "raw data." All of it has to be challenged, checked, and reexamined by a later historian—or even by the interviewer himself, but only after all the interviews and estimates have been collected. Indeed, even the individual interpretations are themselves important historical possessions.

3. The flavor of the past. Personal anecdotes and remembered details have sometimes been the only sources of information about events and the atmosphere of bygone days. What did the physicians and house staff say; what stories were told in the corridors; what were the routines?

4. One can record the present for students and scholars of the future. The tapings of today can recreate vividly for historians of tomorrow how a class was taught, how teaching rounds were conducted, what the personalities were like of both the leaders and the followers.

5. Historical dividends. Sometimes information is accidentally obtained about subjects or events which have nothing to do with what is being studied by the interviewer, but which have value to historians in other fields. For instance, the heretofore unknown behind-the-scenes happenings concerning the appointment and the dismissal of a health commissioner in New York City were discovered in an interview with a retired member of the faculty who had been the personal physician to the mayor at the time. Especially useful is the interview with the "little people," the assistants, the ancillary personnel—the views and behavior of those whom history often ignores.

How can the oral history technique be used for teaching the History of Medicine?

Here is one way. Students in pairs or singly can be given recorders which they can use to interview persons on the faculty or in other local institutions. A person or subject can be chosen in consultation with the teacher of history, or with another faculty member. The student can spend a month, a year, or several years obtaining information and ideas on either a single subject or a

single person. Of course, a certain amount of instruction and training has to be given first to the students who will interview.

There are several values to this. In the first place, the interviewer must prepare by learning his subject in detail. Secondly, he is given the unusual opportunity of having virtually person-to-person teaching, and usually the interviewee will cooperate, not necessarily because he wants to aid the student, but because he is being recorded for posterity. Another value is that the tape and transcript can then become an historical source material, either as an archival possession or as the basis for a published contribution by the student himself. Visualize the impact on a student hearing an investigator describe his uncertainties or recite the train of his thought that led him to embrace an idea. Consider the importance to a student of getting different views from different people on the same subject.

I wish to state, at this point, that I do not subscribe to the principle that pupils should determine what their curriculum should be nor what should be taught within each course. Incomplete past precedent is sometimes used, for instance, to support the idea that students should run their schools. It is stated that the medical students at Bologna, for instance, in medievel days chose and hired their teachers. This is true, but the full facts give an entirely different meaning to the relationship.

Universities were probably started by students coming together to receive instruction from more knowledgeable people and also from each other (5). The reason in some areas (for example, in Bologna and Padua) that students hired the professors and had an important voice in the running of the schools is that the students were paying the salaries (5, 6). A mere threat that the students would leave a university and go elsewhere—that is, that they would take their money with them—was sometimes enough to bring to heel the professors and sometimes even the town. But we all know that today the formation of schools and the monies for salaries and maintenance come chiefly from the government and private philanthropies, not from the students. Thus the control and direction of schools at present woud be expected to be in the hands of the financial founders and contributors, not the students.

It is curious that those who advise breaking with the traditions of the past and striking ahead on new paths are sometimes the same who wish to return to past conditions.

Nevertheless, it would be less than thorough to organize any course of study without trying to determine what the pupils would like to get from the course. It would seem to me foolhardy to continue to teach a subject without self-evaluation, including the opinions and advice of those being taught. Therefore, students' views and desires should be consulted when a History of Medicine curriculum is being planned. This has the added value of continuing to improve the teaching and the subject matter so that the *course of history* can have an impact on the *history course.*

What does the student say on whether the History of Medicine should be required or elective? I have found more sentiment among students than among faculty for history to be part of the required core curriculum. The student committees have told me that those among them who are most in need of being broadened in outlook by history are least likely to choose it as an elective. I do not stand firmly on this issue, for I would much rather see a strong program with adequate time and inspiring teachers that had to compete with other subjects as an elective than I would a required but token, unoriginal series of lectures.

By Whom Should the Course Be Taught?

The question of who is to do the teaching is not easy to answer. Attacks come

from several directions. The professional historians attribute to the practitioner or medical teacher poor scholarship in history. They deplore leaving the instruction in the hands of "individuals without special training or experience." In contrast, the medical faculty sometimes looks upon history in a medical curriculum as either irrelevant or as a cultural dressing and finds neither place nor money for professional historians on the school faculty.

The problem is two-fold. Since medical historians cannot be competent in all fields of medicine, they are unable to present or evaluate the detailed analyses of experiments and techniques that are essential to understanding the direction of progress, including the false starts and the questions left unanswered. The teacher of medicine, on the other hand, is fitted to survey with his students the dynamic developments leading to present conditions, but only in a few special areas. George Sarton recognized this difficulty but his advice was to have the teachers take advanced graduate training in both science and history. He had no great trust in the writings on history by men of science (7). The solution, it seems to me, lies in the employment of members of all of the clinical and basic science departments to teach medical history precisely and pragmatically, with the history department choosing the syllabus and, in consultation with each department, the participants, briefing the teachers on the objectives in each instance and supervising the lectures, seminars and assignments. The physician and basic scientists instruct on "specific history"—the major concern of the course. The historians focus on "general history."

The large numbers of well-trained, highly competent investigators in the History of Science and Medicine are too little used and are in little demand. There are many professors and few pupils, many scholars but few teachers. I believe that once the History of Medicine becomes a vital part of the teaching curriculum, even by the non-historian scientists, the historian will soon be seen to be needed more and more. His scholarship is necessary to oversee, challenge, and lead the discussions on sociology and cultural problems as they have developed from the past.

It also means that the History of Medicine must be taught by teachers, not essentially by historiographers, although the combination is fervently to be sought. Enthusiasm and the ability to illuminate and to make the past live are necessary to good teaching. Of course, the same qualities are needed in any course whether it is in anatomy, pathology, surgery or dermatology. But in the History of Medicine, we are dealing with a subject that falls last on the curricular list—a victim of contempt at worst, of casual tolerance at best. Forceful and inspiring teachers are particularly needed in order to help bring this part of education past the closed curricular gates directly to the student, whether they be historians focused on medicine or clinicians interested in history. However, I believe it is the practicing or teaching physician at the present time who should be the backbone of instruction in history, who is the only one uniquely qualified to point to the technical errors of the past, the different ways in which problems have been solved, the varying aspects of the same sets of facts, the detailed trends of medical thought in our time.

Of course, the separation between medicine and the humanities, in fact between science and the humanities, only appeared in the nineteenth century. Before that, one person could encompass many fields. The proliferation of writings and the expansion of science made specializations necessary so that the cultural approaches had to come from different avenues. Both the humanities and the sciences (medicine included) have studied humanity and the world by different means but, it seems to me, with common goals. Understanding how ideas concerning the technical functioning of

men and women were arrived at is no less history and no less cultural than studying their literary, political and sociological behavior. But neither is it more important; a medical student of today is not educated unless he has learned enough of both approaches.

Let us, the faculty, show him how necessary is the dynamic view of knowledge, that the examination of past technical papers is actually history. Let us get the teachers and students so focused on the usefulness of past observations to explain the present that they will find themselves enmeshed in general historical perspectives. They themselves will call for the historian, at first perhaps through guest appearances, then in seminar participation, and finally by making him or her an integral part of the faculty, looking toward a full department.

Allan Debus (2) has said, "The history of science needs the interest of the scientist-historians. Both parties should actively aid each other to promote the field as a whole."

Thus, the innovations (if they can be so-called) that I have proposed are:

1. The entire faculty is the source for the teaching of medical history.

2. Only subject matter is included which contributes clearly to understanding present conditions or future trends. Recent history is therefore accented.

3. The students must participate actively in the learning and teaching process.

4. Newer techniques of pedagogy are sought and used.

I have spoken of why history should be taught, what, how and by whom. The question of what to do next can be a subject in itself. Nevertheless I think it is proper for me here to mention the most important ingredient in developing the History of Medicine in the medical school—the attitude of the faculty. Therefore, the first step is clearly to convince ourselves. Do we really think that historical teaching is contributory to the training of a physician? If we do not, let us not strain any further. But if we do believe that the teaching of history is essential, then let us march out to our colleagues, prepare ourselves for the argument, challenge opposing opinion, offer our services, alter our own teaching. With such active participation, time in the curriculum and money for the programs will surely come.

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Diseases, Decision-Makers and Doctors[1]

By HUGH J. C. J. L'ETANG, B.M., D.I.H[2]

TWENTY-FIVE years ago Britain was recovering from its worst winter of the century. It was almost unendurable. Wartime food rationing continued. There was a shortage of coal and coke, and such fuel as was available was immobile; road and rail haulage was paralysed. Your invitation to lecture reminded me of two episodes in those cold and dark months. The first was of Professor Frank Elliott's announcing, before he delivered a lecture at the Royal Society of Medicine, that his brief case and notes had been stolen from his car: I need hardly tell you that even without his notes he performed brilliantly. The second memory was a lecture by Dr. Harley Williams entitled "The Illness of Woodrow Wilson and Its Influence on History." What tempted me to attend this particular lecture I cannot say. What I can say now is that it fired me with a new interest which has led me up unexpected and strange pathways, introduced me to statesmen, soldiers and historians from many countries, and, finally, is responsible for my presence here today.

It is appropriate, too, in this College that I should start with President Woodrow Wilson. On these walls there are, or there were on my last visit, pictures of Dr. George de Schweinitz, who realised that Wilson's loss of vision in 1906 was due to arterial degeneration and accordingly advised premature retirement, and of Dr. Silas Weir Mitchell, who examined Wilson in 1913 and doubted if he could serve even for one term and retain his health. Recent researches by Professor Edwin A. Weinstein, of New York, have shown that Wilson's condition and future prospects were indeed grave in 1906, and that the arterial disease which had manifested itself as a hemorrhage into the left eye, with permanent loss of vision, had been present at least as far back as 1896. In May of that year, Wilson noticed weakness and pain in the right arm and numbness in the fingers of the right hand, and Wilson himself, political historians and, less excusably, some medical historians have accepted a diagnosis of writer's cramp or neuritis. Professor Weinstein has suggested, and it now seems so obvious, that arteriosclerotic disease of the left internal carotid artery, a harbinger of later generalized disease, was responsible both for the weakness of the right arm in 1896 and for the blindness in 1906.

The life of Woodrow Wilson illustrates so well the problems inherent in the title of this lecture. How much does disease affect decision-making? Even if disease does affect decision-making, would another man—physically fitter but with less experience, mentally fitter but with less of that aura and fascination possessed by world leaders which we all call charisma—have made a better decision? And what of the doctor? Should de Schweinitz and Mitchell have positively forbidden Wilson from following an active academic or political career? Could de Schweinitz and Mitchell really have persuaded a man so determined as Wilson to leave the public stage forever?

Wilson was literally and comprehensively crippled in September 1919. After that he was ill-fated to make any decision. His crucial decisions, alas more immediately crucial for the rest of the world than for the United States, had been made in the previous twelve months and retrospectively

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have been considered disastrous: his alienation of the Republican Party, the obstinate decision to attend the ill-named Peace Conference in person, and the frustrating and fruitless wrangling with European leaders. But were these decisions due to the inexorable spread of arterial disease, or were they due to that basic inflexibility and rigidity of his personality which stretched far back to his youth, or again were these factors interrelated?

It is questions such as these that continue to bedevil us when we turn to President Roosevelt and, in particular, to the last eighteen months of his life. Just as Wilson is associated, unhappily in the memories of many, with the Versailles Treaty, so Roosevelt is associated, equally unhappily, with the deliberations and decisions of the Yalta Conference in February 1945. The debate about the rights and wrongs of Yalta still continue, but the doubt about the state of Roosevelt's health has to a large extent been resolved by the one medical witness, and an authoritative one too, who can pass an opinion. Dr. Howard Bruenn, then a Commander in the Medical Corps of the U.S. Navy and consultant in cardiology at the U.S. Naval Hospital, Bethesda, was first asked to examine Roosevelt on March 27, 1944, and diagnosed hypertension, hypertensive heart disease, left ventricular heart failure and acute bronchitis. It is now clear that concurrent attacks of abdominal pain, one of which distressed Roosevelt's son James, were due to cholecystitis, whilst the subsequent loss of weight, which was remarked upon by many, including Churchill's physician, Lord Moran, are attributed by Bruenn to a low-calorie and low-fat diet which had been instituted. Roosevelt's blood pressure, which remained high during the Second Quebec Conference in September 1944, was exacerbated after attending a film about Woodrow Wilson. What emotions that film may have conjured up! The loss of weight increased in 1944 and, by November, was associated with loss of appetite, and although there was no electrocardiographic evidence of digitalis toxicity, the dosage of the drug was reduced to lessen any possible effect on appetite.

In the issue of the *Annals of Internal Medicine* in which Dr. Bruenn's article appears there is an editorial comment (1):

> "We are given by Dr. Bruenn, the picture of a great and gallant man, fatigued by the burdens of his office and by his hypertension, yet quite able to exercise his judgment and to use the fruits of his unique knowledge and experience in guiding the war effort."

Yet Dr. Bruenn writes of Roosevelt at Yalta (2):

> "On February 8 (1945), after an especially arduous day and emotionally disturbing conference (he was worried and upset about the trend of the discussions that day at the Conference, namely Poland) he was obviously greatly fatigued. His color was very poor (grey) . . . the blood pressure, however, for the first time showed pulsus alternans. . . . His hours of activity were rigidly controlled so that he could obtain adequate rest."

After his return from Yalta, Roosevelt continued to lose weight, and Bruenn noted that despite the withdrawal of digitalis "he was still troubled with his lack of appetite" and that "by the end of March he began to look bad." On March 29 he went to Warm Springs, Georgia, where, after a noticeable improvement in his condition, he died on April 12.

Despite Bruenn's admirable case history, written at a proper interval after his patient's death, what the lawyers call a scintilla of doubt remains. At Mrs. Roosevelt's wish there was, understandably perhaps, no autopsy. Dr. Bruenn observes that the original hospital chart containing clinical notes and laboratory tests, which was kept in the safe at the U.S. Naval Hospital, Bethesda, could not be found after Roosevelt's death.

In the absence of that incontrovertible evidence that only an autopsy can provide, one may still speculate, despite Bruenn's account, of another possible cause, or causes, for Roosevelt's ill health.

Speculation, and the questioning of apparently established truths, are healthy attitudes of mind. But these may shade into morbid preoccupations, unhealthy suspicions, and plausible, apparently well-constructed, but unfounded and unjustified conclusions.

World leaders should have an autopsy, and the findings should be made public, so that natural curiosity or unbridled speculation may be dispelled. If an autopsy report is not available, private enquiries, often at second or third hand, however reliable the source or convincing the evidence, can never be authoritative. I must mention incidentally in this context that a plausible case has been made in support of a theory that an autopsy was actually performed on Roosevelt.

I have no wish to give the impression that only American presidents are incapacitated. The British record is a grim one, particularly in those sad years when we drifted from the First World War into the Second. Indeed, even a cursory glance at our prime ministers between 1922 and 1940 makes one wonder how the country was governed. Andrew Bonar Law had difficulty with his speech when he became prime minister in 1922, was speechless in 1923, and resigned because of a carcinoma of the larynx a few months before his death in November 1923. James Ramsay MacDonald, prime minister in 1924 and again from 1929 to 1935, showed signs of cerebral arteriosclerosis as early as 1930 at the age of 64 years when he even forgot the name of the Canadian prime minister whom he was entertaining, and said, "My brain is going" (3). Stanley Baldwin, prime minister in 1923–24, 1924–29, and again from 1935 to 1937 on whom the main odium of the wasted years has fallen, had bouts of serious and incapacitating prostration when as he wrote, "My inside is a mess of cold rumbling fluidity; my brain is costive. Faith is dying. Hope is dead" (4). He was 68 years of age when he took office for the third time. His inner tension was revealed by tics during which he sucked and sniffed blotting paper, grimaced, twitched and rubbed his face. Neville Chamberlain, prime minister from 1937 to 1940, the architect of the Munich agreement, died from a carcinoma of the bowel in November 1940 at the age of 71, a few months after he had been driven from office by a stormy debate in which he was blamed both for his indecision in the phoney war and for disastrous decisions in the Norwegian campaign.

Diseases, decision-makers, and doctors: how and where does the doctor stand?

As private practitioners, without responsibility to a bureaucratic system, our only duty is to the patient: to help him to work as efficiently as possible, and to dissuade him from activities that may be harmful to him.

There can be no doubt that a doctor in the armed forces, civil service, occupational health or university health services, who has accepted the appointment and its attendant responsibilities, must be prepared to render an unprejudiced opinion on the subject's fitness or unfitness for service, promotion or transfer. In rendering such an opinion, he is not by any means bound to pass on personal or domestic details which he may have learned in the course of a routine examination.

Doctors are not unique among professional men in having both a duty to their patient and a duty to the community. The possibility of such a clash in loyalties is probably greater in theory than in practice.

Can a doctor breach the confidentiality of his relationship with his patient in the contemporary national interest?

This implies, first of all, a far greater skill and certainty in diagnosis and prognosis than many of us possess and an even

greater skill and certainty in analysing the political and military situation and the national interest.

It also forces one to admit, reluctantly, that a doctor, depending on the circumstances, may have to adopt a slightly different attitude to his patients and even a different interpretation of confidentiality, a term that in itself is difficult to define with precision.

But we are not infallible; we are not judges; however senior, we are not elder statesmen. Although a breach of confidentiality might conceivably have a successful national outcome on a single occasion, despite an unhappy outcome for the patient, resort to such tactics at all frequently would remove any trust between doctor and patient.

These ethical uncertainties may be of less practical significance in America than in Britain. The American president is the commander-in-chief, and so many presidential medical advisers—Grayson, McIntire, Bruenn and Heaton, for example—have both professional and service reasons for devoted loyalty and absolute discretion. By tradition in Britain, prime ministers are looked after by the leading medical consultants and private practitioners of the day, who eventually go to the same place where a cynic once said all good British socialists also go: the House of Lords. The ennoblement of Lords Dawson, Horder, Moran, Evans and Brain testifies both to their professional competence and to their acceptance in the highest, and still exclusive, reaches of the British establishment.

But they are independent of the Government hierarchy, and that gives them room for initiative. It seems clear that when Stanley Baldwin was failing in 1936, Lord Dawson may have been party to moves that would have eased him from office before his pre-determined retirement date, the 1937 coronation. A favourable opinion by a cardiologist, much to Baldwin's relief and delight, put an end to the scheme, if there was such a scheme, and the electrocardiographic irregularity was dismissed as a normal irregularity. Lord Evans, who had been called in to attend Anthony Eden (now Lord Avon) by his general practitioner during the Suez crisis of 1956, obviously felt compelled to tell Harold Macmillan, then Chancellor of the Exchequer, on November 18 that the prime minister must take a serious rest if a breakdown was to be avoided. Lord Butler records that Macmillan lost his temper with Lord Evans and said that the prime minister could not be withdrawn in this way, and maintains that Lord Evans told him that Anthony Eden "could not live on stimulants any more" (5).

It comes as no surprise that when Churchill had another stroke in February 1952, Lord Moran's scheme to persuade him to retire from the hurly-burly of the Commons and lead the country from the House of Lords, was ill-fated. Having discussed his scheme with Churchill's Principal Private Secretary, Lord Salisbury, and the Queen's Secretary, Moran talked to Churchill and wrote to him. The result was not unexpected: "He was not angry when he got your letter; he just swept it aside," said Lady Churchill (6a). And, incidentally, he remained in office for three more years.

As Churchill clung to office, the strain on Eden, his successor, grew. Another stroke which paralyzed Churchill in 1953 raised hopes and fears. It illustrates too the informality of the British scheme and the independence of the private consultant. Lord Evans, Eden's doctor, felt compelled to tell Lord Brain, the neurologist, who had examined Churchill, that in the uncertain circumstances "his patient, Eden, did not know where he stood" (6b).

Bruenn's clinical notes on Roosevelt conclude with the words (2): "I have often wondered what turn the subsequent course of history might have taken if the modern methods for the control of hypertension had been available." The level of Roosevelt's blood pressure would no doubt have

been controlled and his life prolonged. Some four years after Roosevelt died James Forrestal, having recently resigned as secretary of defense, fell to his death, the victim of the horrifying and frightening delusions caused by either a paranoid psychosis or a profound depression. Advances in psychopharmacology which were developed after his death might have brought relief in his lifetime. But what, we must ask ourselves, would have been the quality of the lives of Roosevelt and Forrestal had they responded to therapy? Dr. Mottram Torre of New Orleans has convinced me that the mainsprings of endeavour in a leader, and in those he leads for that matter, are powered by four qualities: vitality, mood, rationality and intellectual capacity. These qualities are difficult to assess and even more difficult to measure; but some method of measurement of these qualities, both in the leader and his followers, whether on drugs or not, would be immeasurably more valuable than the levels of blood pressure, electrocardiogram tracings or blood chemistry.

If Roosevelt and Forrestal died too soon, President Kennedy, in his tragically foreshortened life, was able to benefit from the pharmacological millenium. I think it is clear that he had adrenal insufficiency (diagnosed incidentally in London just after the Second World War) and, judging from the mooning of his face, that he was treated with steroids. I have long been interested in the effects of steroids, if any, on his vitality, mood, rationality and intellectual capacity. Like most leaders, he may have been exceptionally endowed with these qualities. Did steroids enhance or alter some or all of them? The mooning of the face, a local sign, is not necessarily correlated with other effects. The dosage, even if it was known, is subject to individual susceptibility. Professor J. K. Galbraith unwittingly provides one clue when he refers in his diary to Kennedy's exceptional appetite at meals and how on one occasion after eating a large breakfast he finished Galbraith's share as well. If steroids are carefully judged, they can produce a feeling of well-being; but, there might come a time, if the engine is raced too much, when enhanced vitality and mood lead to mere flights of ideas, irrationality and intellectual impairment.

The effect of drugs, even the common everyday drugs for travel-sickness or respiratory infections, on the leader and his decision-making is a sadly neglected problem. Drugs are so often used in relation to fatigue: to prevent it by stimulants or promote it with sedatives. Nor is fatigue itself always the pleasant sensation we associate with the successful accomplishment of a mental or physical task. Fatigue occurs when mind and body are driven beyond the psychological and physiological safety barriers. It is a state suffered all too often by our patients and, I am sorry to say, by ourselves. It may be that the victims are noble and conscientious, but it is preferable that a president or prime minister takes adequate leisure, though those who do are subjected to carping criticism. Listen to Galbraith's description (7a) of the slippery slope:

> "Weariness is something which I am incapable of understanding. Afflicted by it, life becomes less pleasant, one's judgement deteriorates, so does temper and I am conscious that this is so. Yet my judgement deteriorates just enough more rapidly than my perception of this downward trend so that I do not stop and rest."

Psychostimulants are frequently dismissed as part of the culture of wayward and recalcitrant youth, but their elders and betters also indulge in these drugs, not of course for pleasure or mystic experience, but to drive themselves harder and faster up the strait and narrow path and to reduce or postpone the need for sleep. Amphetamine and its derivatives certainly promote wakefulness, lessen awareness of fatigue, and increase mental concentration and initiative without necessarily improv-

ing performance. Mood and confidence may be enhanced, but the mental stimulation is not always beneficial. Large dosages may be followed by fatigue and depression, and excessive dosages over a long period of time may cause headache, palpitation of the heart and, more significantly, confusion, apprehension and delirium.

It should be recorded, though its significance cannot be proven, that in July 1956, at the beginning of Britain's last imperial adventure which ended in the disaster over Suez, Eden, the British prime minister, said that he was living on benzedrine. On October 5, as the crisis worsened, and as clandestine negotiations took place with the French and Israelis, he was struck down by another attack of the intermittent biliary fever which had long afflicted him. What treatment he received is not known, but thereafter an anonymous adviser has indicated that he was in "a state of acute intoxication in the technical sense of the term" (8).

Galbraith, who has described so well how fatigue impairs his judgement and how impairment precedes his awareness, is equally well aware of the disadvantage of attempting to secure rest and recovery by artificial means.

"I have made an important discovery in the field of experimental medicine," he wrote (7b) when he was American ambassador in India and had decided to induce a long night's sleep with "a massive dose of sleeping pills."

> "When one is working under high tension it is better to rely on a small amount of natural sleep than a larger amount induced by barbiturates or sedatives. Not only do you feel better in the morning but you feel a lot better if you have to wake up in the middle of the night."

Had this advice been available to the British secretary of state for war in 1963, it might have avoided a statement in the House of Commons which sealed his fate and which was a contributory cause of the Conservative Party defeat in the 1964 election. Rumors about his casual encounter with a young woman in 1960 had mounted to such an extent that in the early hours of March 22 he was routed out of his bed and summoned to the House of Commons by senior officials of the Conservative Party. The statement which they drafted was read in the House later that morning and contained a gratuitous, unnecessary and irrevelant denial of any impropriety with the young woman. By now the Labour Party and the Press were openly hostile, and on June 4 the war minister, compelled to admit that on this trivial matter he had misled the House, tendered his resignation.

He was in no state to take part in any sort of discussion. He and his wife arrived home after midnight on March 21/22 and had taken sleeping tablets. They were awakened at 2:45 A.M. by one of his parliamentary colleagues, and his wife recalled that "we were so groggy" and that her husband groped his way around looking for a clean shirt and trying to fit his cuff-links. Some of us are permitted to sleep on our problems. Statesmen and officials at times of crisis are rarely allowed the luxury of adequate time for quiet reflection. The minister may well have been in the same state as Galbraith, who was forced to contend with one crisis in India "in the middle of the night under a kind of drugged haze" which lasted well into the morning.

Disease, decision-makers and doctors. I would make a plea that decision-makers, whether they are government officials, administrators, negotiators or political scientists, know something of disease and the effects of disease. In a way all of us, lay people and physicians alike, are all decision-makers: in our hands lies the decision to appoint the statesman who rule our destinies. I trust I will not offend my medical colleagues when I say that I think it desirable that members of the public have some idea of everyday disease processes and their effects on performance. This I would regard

with more favour than their insatiable interest in organ transplants and other esoteric procedures. War may be too serious an issue to be left to the generals; peace may be too serious an issue to be left to statesmen; war and peace are such serious issues that the diagnosis of illness in generals and statesman, and the assessment of its effects, should not be left entirely to physicians.

Great men may fool their doctors some of the time but they cannot fool their countrymen all the time. As patients, we physicians know only too well how we can present a good face, and a guarded medical history, to our own medical advisers. By the same token we should admit that men who have climbed to the pinnacles of power have acquired such skill in concealing their emotions and in guarding their tongues that, if overt illness cannot be concealed, its effect on their mental and physical fitness may to some extent be concealed.

The intelligent layman (or woman), relative, political confidants, colleague, secretary or journalist, however, may have greater opportunities than the physician of assessing incapacity. Over a long period of time they may catch their master in those fleeting moments when his guard is down. Sir Alexander Cadogan, permanent undersecretary of the British Foreign Office from 1938 to 1945, met Roosevelt at many conferences during the Second World War. He wrote from Yalta on February 20, 1945 that he was shocked by Roosevelt's appearance (9):

> "I know he is never a master of detail, but I got the impression that most of the time he really hardly knew what it was all about. And whenever he was called on to preside over any meeting, he failed to make any attempt to grip it or guide it, and sat generally speechless or, if he made any intervention, it was generally completely irrelevant."

And then there is the vivid clinical description of Winston Churchill written by a naval officer in April 1941 which is more shattering than any of Moran's observations (10):

> "He, Churchill, was puffy and very pink and white—pig like. . . . He was very depressed and desperately tired—in a sort of coma almost. His speech was rather slobbery and very slow. . . . It was a terribly depressing interview. The general atmosphere of sycophancy and the old man's lack of grasp and understanding, made me leave to walk home convinced for the first time that we could not win the war."

Britain stood alone in April 1941 when we were losing Greece, and about to lose Crete and lose again in the Western Desert.

Finally, a description of Anthony Eden in the House of Commons in November 1956, at the climax of the Suez crisis, written by an experienced journalist (11):

> "The prime minister sprawled on the front bench, head thrown back and mouth agape. His eyes, inflamed with sleeplessness, stared into vacancies beyond the roof except when they twitched with meaningless intensity to the face of the clock, probed it for a few seconds, then rose again into vacancy. His hands twitched at his horn-rimmed spectacles or mopped themselves in a white handkerchief, but were never still. The face was grey except where black-ringed caverns surrounded the dying embers of his eyes. The whole personality, if not prostrated, seemed completely withdrawn."

Physicians would use different descriptive terms, but the picture is one that we would be ill-advised to ignore.

It has been maintained that statesmen can no longer conceal ill health. They are compelled to give regular press conferences and appear on television and thus provide a unique opportunity for any viewer to become doctor, detective and reporter—even though trained observation and experience are necessary to appreciate fleeting changes of emotion and expression. Color television, if sufficiently refined, might even show the

pallor of blood disease, the olive-green tint of jaundice or the red and mauve facies associated with heart and chest disease, so it is argued. Well, my own experience may be unfortunate, but at present it seems that subjects may be given a jaundiced or cyanotic tinge by a minor adjustment of the control panel! Whether the picture could ever be precise or penetrating enough to reveal the indescribable appearance of impending death is open to doubt. Churchill saw that change in Roosevelt at Yalta, as did Adenauer later in John Foster Dulles—but not on television.

Speech, rather than appearance, may be more revealing. Slurred speech, mispronunciation and difficulty in selecting the correct word are found after a stroke but may occur in subjects who are extremely tired. Perhaps Churchill can be excused for confusing Adenauer and Eisenhower, and sovereignty and solvency, as he did after his third stroke; some of us might do the same if exhausted or under pressure. Eisenhower had more serious lapses after his stroke in 1957; he reversed syllables in words, had difficulty in finding the correct word, and said "yesterday" instead of "tomorrow."

These are the signs to seek, but not to expect, for all statesmen do not necessarily have to appear in front of television cameras all the time. Moreover film can be cut, edited or even suppressed, as were some of the photographs of Roosevelt at Yalta. A weakness on one side of the body or face due to a stroke could be concealed by training the camera on the unaffected side. Clever photography made the public unaware that Stalin was short in stature and had a deformed arm. President Nixon was placed at some disadvantage during his telecasts with Kennedy in the 1960 election; he scorned make-up, and his six o'clock shadow was there for all to see. If Senate and Parliament proceedings are to be televised it may be necessary, therefore, to discount the haggard appearance of the healthy and to assess, instead, how the projected picture may have blurred, altered or distorted the usual picture of fatigue, mental strain or illness.

The validity of retrospective historical and medical judgements has been questioned. The critics argue that because a man has, or has had, a pathological or psychological disorder, there is no reason why he did not, or could not, discharge his duties adequately. They insist that unless a day to day (hour to hour, even) record of his health is available his performance cannot be judged on a day-to-day or hour-to-hour basis. They maintain that the comments of non-medical witnesses however eminent, be they cabinet or service colleagues, fellow parliamentarians, journalists or friends, cannot be accepted on medical matters.

They argue, and here their opinions have more substance, that decisions and decision-making cannot be neatly packaged and punched with a time clock, and that those who try to unravel and isolate crucial decisions are guilty at best of superficiality and at worst of naivety. It is true that decisions made over burning questions—Vietnam, the Common Market or Ireland—are each the result of countless preceding decisions. But certain clear cut, individual decisions are taken in military and political life. Perhaps I may be permitted to anticipate one more objection to retrospective studies: it is that even if it were possible to decide the precise moment when an individual made a decision it is often impossible to determine his state of health at the time or whether, if he was ill, he made a supreme effort to overcome disability.

In defense of retrospective analysis, I must insist that without it we would be denied any balanced knowledge of past events and would have to rely on the heavily edited minutes of civil servants or the one-sided accounts of events provided by public relations departments. Nevertheless, my experience, largely second-hand it is true, has convinced me that big decisions

made by one man alone, are often made quickly and even casually, Eisenhower's decision to launch the invasion of Normandy early in June 1944 being an outstanding example. The weather was uncertain in the early days of June, 1944, but in the late evening of June 4 an improvement was forecast for some 36–48 hours on June 6. Eisenhower discussed the decision with his subordinates, Generals Bedell Smith and Montgomery, Admiral Ramsay and the Air Marshals, Tedder and Leigh-Mallory. Then these men—great commanders in their own right—grew silent and looked away. Finally Eisenhower said, "I'm quite certain we must give the order for Tuesday morning" (12). Movement orders were immediately issued. The point of no return for the invasion fleet was 03.30 on June 5. At this meeting before dawn, Eisenhower listened again to the weather forecast and said with decisive and emphatic brevity, "O.K. let's go."

Eleven years later General Eisenhower, who had become President Eisenhower, had a coronary thrombosis. He was taken ill on September 24, 1955, made a rapid recovery, began to deal with urgent business and see leading members of the government and administration from October 8. He returned to full duty on November 22. His illness came at a quiet period in American affairs, for he later realized (13) that had a dangerous situation arisen (such as the Lebanon crisis in 1958), "the concentration, the weighing of the pros and cons, and the final determination would have represented a burden, during the first week of my illness, which the doctors would likely have found unacceptable for a new cardiac patient to bear." Had there been an emergency, he wrote in the same passage, "Such as the detection of incoming enemy bombers, on which I would have had to make a rapid decision regarding the use of United States retaliatory might, there could have been no question, after the first forty-eight hours of my heart attack, of my capacity to act according to my own judgement."

This is the thought I wish to leave with you. Should we not all ponder the wisdom of permitting a patient, within 48 hours of the onset of a coronary thrombosis, and shortly after he emerged from an oxygen tent, or another in the throes of any serious mental or physical illness, to take decisions of this magnitude? And, perhaps more important, how can we prevent such an occurrence?

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The Rise of Dermatology in Philadelphia[1]

By HERMAN BEERMAN, M.D.[2]

DERMATOLOGY as a specialty in Philadelphia is barely one hundred years old. The past is represented by a great group of pioneers, who started from scratch and who built in Philadelphia one of the great centers of dermatological activity in the world. This progress is represented by the accumulation of new knowledge and by the organization of departments, societies and institutes, many of which still exist. Although a century is a short time to assess the march of progress in a discipline of medicine, there is no question about the rise of dermatology, nor is there doubt about the future of Philadelphia dermatology under the aegis of our five medical schools.

The external location of skin diseases has created an interest in them since biblical times. But dermatology as a recognized scientific discipline of medicine is of recent origin. This is probably due to the unwillingness of competent physicians in the past to devote themselves to a single phase of medicine, in this case presumed to be a static superficial one, whose manifestations, in spite of their exposed position, defied accurate interpretation.

Scientific dermatology, according to Bechet, began on November 27, 1801, when the old Hôpital Saint-Louis, in Paris, with Jean Louis Alibert as its head, was officially dedicated for the treatment of cutaneous diseases. Alibert and his successors, as well as the masters in Vienna and London, were responsible for directing the feeble efforts of American physicians toward dermatologic learning. American dermatology was born in New York on June 22, 1836, when the Broome Street Infirmary for Diseases of the Skin was opened under the direction of Henry Daggett Bulkley and John Watson. One year later, Bulkley delivered a series of lectures on cutaneous diseases at the Infirmary. He continued these lectures for three years at the Broome Street School of Medicine, at the New York Dispensary, and later at the College of Physicians and Surgeons. Bulkley, however, was not only the first to practice dermatology in America but was also the first to practice the specialty exclusively in this country. The founding of the New York Dermatological Society in 1869 was New York's crowning glory which gave the city the justifiable appellation of "Fountainhead of American Dermatology." The Philadelphia Dispensary for Skin Diseases, opened by Louis A. Duhring on January 7, 1871, became the cradle in which dermatology was reared by Duhring and his many associates and followers. From this beginning, Philadelphia dermatology has risen during the past one hundred years to a preeminent position in the world of dermatology. In this development, the University of Pennsylvania, Thomas Jefferson University, and more recently, Temple University, Woman's Medical College and Hahnemann Medical College and Hospital have played significant roles. The Skin and Cancer Hospital of Philadelphia, now part of Temple University, has become an integral part of the dermatological scene in Philadelphia and under its present leadership is expected to be responsible for much important work in the future. At this point it is pertinent to indicate the great contribution of Dr. Reu-

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ben Friedman, late Professor of Dermatology at Temple, to our understanding of Philadelphia dermatological history.

It is essential in a presentation such as this to have a clear definition of the field under discussion. Dermatology has for many years been hampered by the label of "the superficial specialty." As long ago as 1887, however, Jonathan Hutchinson, the great English physician, said that dermatology was deserving of "a foremost place as a branch of scientific medicine which offers attractions to the student of laws of disease in general." In 1894, Duhring, no doubt influenced by the address of Lorry (1726–1783), asserted that diseases of the skin must be studied from the standpoint of general medicine and that "our conception of the scope of dermatology must be widened as to include every pathologic manifestation which occurs in the integument, irrespective of the cause or the nature from a practical standpoint. The great nature and importance of dermatology is that it should teach us to know the nature of various processes, as they affect not only the skin but the whole economy. Dermatology should be for the physician a key with which the skin is made to open, in many instances at least, the nature of the underlying process at work in the general system or in special organs and which without this aid might remain obscure." Recent confirmation of this view of the systemic importance of dermatology has been expressed by Sulzberger and Pillsbury.

According to Friedman, the history of dermatology in Philadelphia lends itself to division into three eras:

First, the era before the year 1870, or the era before Louis A. Duhring;

Second, the era from 1870 to 1910, or the era of Louis A. Duhring.

Third, the era after the year 1910, or the era after Louis A. Duhring.

To this may be added a fourth, the period of Stokes and after Stokes (1945–). Duhring (1882) stated that the year of 1870 marked the line between the old and the new. At that time, with the coming into the field of earnest and conscientious workers, dermatology began to grow at a pace previously unheard of. As a result, dermatology attained a conspicuous position among the other specialties of medicine. From this date, the subject has been steadily resolving itself into a well-formed and compact totality, founded on reliable data.

The Era Before 1870

In his presidential address before the American Dermatological Association in 1870 on "The Rise of American Dermatology," Duhring reviewed the accomplishments in dermatology up to 1870. In this listing, the works of Philadelphians are conspicuous. But, in the early history of dermatology in our country there was much confusion. Even the most important and dangerous diseases were scarcely distinguished one from the other. A physician as eminent as Dr. Benjamin Rush stated that leprosy, elephantiasis, scurvy, and venereal disease appeared to be but different manifestations of the same disorder, and that "the same causes produce them in every age and country." Rush's dermatological publications include *An Account of the External Use of Arsenic in the Cure of Cancers, An Inquiry into the Causes and Cure of Sore Legs,* as well as articles on scarlatina and measles. Dr. John Morgan, founder of the School of Medicine of the University of Pennsylvania, wrote a brochure on smallpox. The Rev. Samuel Stanhope Smith, a noted president of the College of New Jersey (Princeton), delivered an oration before the American Philosophical Society in Philadelphia in 1787 entitled *An Essay on the Causes of the Variety of Complexion and Figure in the Human Species.* Toward the close of the eighteenth century, a number of these were presented at the University of Pennsylvania dealing with smallpox, scarlatina, gangrene, contagion, and a dissertation on members of the Rhus Group, commonly known in

Pennsylvania as Poison Ash, Poison Vine and Common Sumac, articles on experiments on absorption, perspiration and salivation. Drs. Edward Shippen and Caspar Wistar informed Dr. John Bartram that at the Pennsylvania Hospital persons who were not given inunctions, but were residing in the same room with others who were receiving mercurial frictions, developed salivation. Shortly after its introduction by Jenner in 1798, smallpox vaccination absorbed the interest of a number of physicians. Philadelphians participated in republication of works of the old masters of dermatology. For example, Thomas T. Hewson of Philadelphia in 1815 translated Swediaur's *Complete Treatise on the Symptoms, Effects and Treatment of Syphilis.*

The first third of the nineteenth century was characterized by an absence of interest in diseases of the skin as manifested in the general books on medicine of the era. Duhring put it: "These were dark days for dermatology; days when, as someone has related the story, a student asking information upon a disease of the skin from a physician received the reply, 'Sir, I know nothing of skin diseases; you must go to the surgeon'; speaking to the surgeon, he was met with: 'Sir, I must refer you to the physician. . . .' " The situation seemed hopeless; the whole subject was shrouded in mystery, and it would seem to be judged either obscure or as being too insignificant to be worthy of serious consideration. There was a disposition to consign the whole of this branch of medicine to those outside the professional pale; no one seemed prepared to take up the matter. Nor can this deplorable condition be accounted for on the plea of lack of opportunities, for much had been accomplished abroad, especially in England through the labors of Willan and Bateman.

For postgraduate work in dermatology, Americans had to go to Europe, especially to Paris. The beginning of the second third of the nineteenth century saw an increase in the publication of original dermatological articles in America and the republication of numerous contemporary foreign works on skin diseases and syphilis. In this effort, Philadelphians were conspicuously active. The first American textbook on diseases of the skin, written by Noah Worcester of Cincinnati, was published simultaneously in Philadelphia, Boston and Cincinnati in 1845. The pioneer American description of the pathology of cutaneous diseases was written by Samuel D. Gross, a Philadelphian, in his *Elements of Pathological Anatomy.* The first chapters on diseases of the skin in an American textbook on the practice of medicine were by George Bacon Wood. Dr. Nathaniel Chapman, Professor of the Theory and Practice of Medicine at the University of Pennsylvania, delivered lectures on the more important eruptive fevers, etc. In 1850, Dr. Wood presented the Medical Department of the University of Pennsylvania with a large and fine collection of models of skin disease which he had purchased in Europe. This was the first such treasure brought to our shores and was prepared by the famous English artist, Joseph Towne, for a long time associated with Guy's Hospital, London. These models, in search of a home, are scattered throughout the University of Pennsylvania, including my very small office. (Dr. Duhring also brought many models from Europe.) The year 1853 saw the establishment of more dermatological clinics. In Philadelphia, a dispensary for skin diseases was set up at the Howard Hospital under the charge of Dr. Oliver H. Partridge, a Paris-trained physician who was devoted especially to the management of skin diseases. Philadelphia was not behind the neighboring city of New York in instruction in dermatology. Shortly after the Civil War (1866), a lectureship in cutaneous and venereal diseases was established at Jefferson Medical College. Dr. F. F. Maury was appointed to head this project and contributed much to it.

Nomenclature at the end of the second third of the nineteenth century was ex-

tremely confusing and still is. There was no conformity between the English, French or German designations for the various dermatoses. In 1869, there was a growing realization of the need for an American journal devoted to diseases of the skin. Duhring rated the publication in 1870 of the Journal of Syphilography and Dermatology as the beginning of a new era in American dermatology.

In the catalogue of some of the Philadelphia aspects of American dermatology prior to 1870, it is clear that Philadelphians played an important role in the development of dermatology from nothing to the solid organizations of today. In this account only brief statements can be made of all that has been accomplished. This includes the founding of special institutions, numerous departments in connection with hospitals, dispensary services, wards in hospitals for skin diseases, professorships and lectureships, and extensive and valuable works in the form of treatises, atlases, monographs and essays.

Medical Specialists in 1870

In 1870 there were no specialists in Philadelphia, but a number of young men were studying in Europe, among them Duhring, who would soon return to America and play an important role in the furtherance of American medical science. The historian Shryock has noted that the rise of specialists after 1870 paralleled the organization of national societies and eventually the development of accreditation boards. However, when the American Dermatological Association was organized in Philadelphia in 1876, its membership at first and for some time afterward was not limited to those who practiced dermatology exclusively.

Philadelphia's first dermatologist, Duhring, speaking to the 1907 class of the University of Pennsylvania Medical School, answered the question, "What constitutes specializing, broadly and correctly interpreted?" He stated that "a specialty is a department or branch of medicine in its widest sense; it is what a limb of the tree is to the trunk. Without the trunk there can be no limbs or branches; without medicine there can be no legitimate specialties. To be genuine, a specialty must be supported by a full understanding of the principles and practice of medicine. No medical man is fitted to be a special observer who is not qualified in general medicine, and under this head must be included general pathology. Without a knowledge of the latter science, especially in its practical bearings, we are wholly unfit to practice it. It will, therefore, be noted that much is required of the physician before he can be considered a specialist. The pursuit of a specialty incites to study and research. It tends to reach new paths and fields. It opens vistas of knowledge that were not before thought of. Under culture, the subject grows and develops, in some instances, it would seem almost without limitation."

The present situation with respect to specialization has been admirably delineated by Pillsbury in his discourse on *Specialism and the Changing World of Medicine* (1962) and in the *Report of the National Program for Dermatology*.

The Philadelphia Dispensary for Skin Diseases

Shortly after his return from Europe in 1870, Dr. Duhring enlisted the support of his family and friends in the organization of a dispensary for skin diseases. This was the third such clinic in Philadelphia; the other two were at the Howard Hospital and at St. Mary's Hospital. The Philadelphia Dispensary for Skin Diseases was opened on January 7, 1871, with Dr. Arthur Van Harlingen as assistant to Dr. Duhring. This dispensary functioned for twenty years and was closed because the institution had sufficiently fulfilled its mission in influencing the public and medical attitudes toward dermatology. It had also led to the organization of special services for cutaneous dis-

eases in connection with almost all of the prominent charitable institutions in Philadelphia. Other reasons for the closure were lack of funds and the imminent resignation of Dr. Henry W. Stelwagon, head of the dispensary from 1880 to 1891.

Louis A. Duhring, M.D.

Medical history is highlighted by certain personalities whose accomplishments and character give the flavor of the period in which they lived. It is, therefore, not hyperbole to agree with Friedman that the period 1870–1910 was the Era of Duhring. In this short survey it is not possible to detail all facets of his career. This has been done admirably by Friedman and more recently by Parish. However, certain facts bear reemphasis on this occasion. Duhring, an amiable individual, Philadelphia's first skin specialist (a new concept for 1870), founded the Dispensary for Skin Diseases with Dr. Arthur Van Harlingen as an associate. He did considerable private teaching and, after an appointment to the faculty of the University of Pennsylvania (he taught there for forty years), he organized the "skin department" with Van Harlingen as his assistant. His writings and editorships were numerous and played a great role in stimulating his colleagues. In a conjoint effort with Dr. F. F. Maury, he started, at the age of 25, the Photographic Review of Medicine and Surgery, a monthly journal which was published for two years. Duhring became visiting dermatologist when a department for diseases of the skin was established at the Philadelphia Hospital (Blockley) in 1876. He served until 1887 when he divided the service between Drs. Van Harlingen and Stelwagon. The first part of an *Atlas of Dermatology* appeared in 1876 and a new section continued to appear about every 6–7 months. In all, there were nine issues containing 36 color plates. Duhring's *Practical Treatise on Skin Diseases* was announced in 1877. Meanwhile, he contributed numerous reports to current medical literature. Eighteen papers published between 1884 and 1891 on Dermatitis Herpetiformis, known world-wide as Duhring's Disease, gave him a recognized place as one of the "leading dermatologic thinkers of the world." He participated in a number of societies, local and national, in general medicine and dermatology. He was especially interested in the American Dermatological Association of which he was president twice. Duhring was a skilled therapeutist. In spite of ill health, he attempted to fulfill the great ambition of his later life, the writing and completion of another book, entitled *Cutaneous Medicine.* The first part appeared in 1895 and the second in 1898. Duhring made great personal sacrifices. He disposed of his substantial fortune in the interest of medicine. The University of Pennsylvania received a large legacy for the general library and the Department of Archeology and Paleontology. The Department of Cutaneous Medicine was endowed with a substantial gift "for the advancement of the subject of the study and treatment of cutaneous diseases." A considerable sum was also given to The College of Physicians of Philadelphia.

Two interesting items are worth citing at this point. George Henry Fox, the renowned New York dermatologist, succeeded Duhring in an internship at Old Blockley. He was shown through that institution by his fellow intern, Arthur Van Harlingen. Thus, by a strange coincidence, within the space of three years, that venerable Philadelphia hospital nurtured three men who were destined to accomplish much in American dermatology.

Duhring and Professor James Tyson of the University of Pennsylvania School of Medicine were great friends. Parish notes: "On Sundays, he would have dinner with the Tysons, either in town or at their summer place in Rosemont. Duhring had known James Tyson since Blockley days when the latter was the microscopist, and later at the Medical School where Tyson had become the pathologist and more re-

cently Professor of Clinical Medicine. J. Ewing Mears of the Medical Department often accompanied Duhring to the Tysons' and the family remembers that both bachelors would eat enough on Sunday to last the week."

Francis Fontaine Maury, M.D.

While Duhring is the "Father of Dermatology" in Philadelphia, he is not the first teacher of this discipline in this city. Actually, his mentor in this field was Dr. Francis Fontaine Maury, a pioneer teacher of dermatology, lecturer on venereal and cutaneous diseases at Jefferson Medical College. Although Maury was primarily a surgeon, he delivered the first course of lectures on dermatology to be given in Philadelphia (1866–67) and was one of the early members of the American Dermatological Association. His contact with Duhring was made while the latter was a resident physician at the Philadelphia Hospital. Duhring had had no previous formal instruction in skin diseases, yet in spite of this he collaborated with Maury in a number of publications, including "Tattooing as a Means of Communicating Syphilis," "Report of a Case of Exsection of the Brachial Plexus of Nerves for the Relief of Painful Neuroma of the Skin," and editing of the first two volumes of the *Photographic Review of Medicine and Surgery* (1870–72). This association was undoubtedly the stimulus for Duhring's quest for further dermatologic experience, since he departed on his European tour shortly after the termination of his residency.

Arthur Van Harlingen, M.D.

In the period of Duhring, several individuals stand out. Chief among these are Drs. Arthur Van Harlingen, Henry W. Stelwagon and Henry Wile. In the latter part of this era, others played an important role but their chief contributions were in the post-Duhring time and their influence on Philadelphia dermatology will be mentioned below. (Duhring, Van Harlingen, Stelwagon, Schamberg, Hartzell, and Shoemaker are called by Friedman "The Big Six.")

Dr. Van Harlingen, a fellow student and devoted follower of Duhring, received a thorough training under the master and developed into an astute clinician. From 1871 to 1885, he was an integral part of Duhring's career, his chief of clinic at the University of Pennsylvania and organizer with him of the Dispensary for Skin Diseases. Van Harlingen illustrated Duhring's *A Practical Treatise of Diseases of the Skin*, and in 1885 this distinguished dermatologist was asked to help organize the Polyclinic Hospital. He became head of its Department of Dermatology and was professor from 1895 to 1912. He served as professor at Jefferson, was a founder of the American Dermatological Association and its president in 1907–08. He was active in The College of Physicians of Philadelphia and in the American Medical Association Section of Dermatology. Van Harlingen was a prolific writer on dermatologic subjects. His textbook was famous for its differential diagnosis tables.

Henry W. Stelwagon, M.D.

Dr. Henry W. Stelwagon is known to modern dermatologists largely through his textbook, *A Treatise on Diseases of the Skin*. This in itself, according to Bechet, "would be sufficient to make him immortal." Stelwagon was another product of the University of Pennsylvania School of Medicine and of European training. After an appointment at the Northern Dispensary, his first real challenge in dermatology resulted from an appointment as successor to Duhring at the Philadelphia Dispensary for Skin Diseases. He had academic association with the University of Pennsylvania in 1885 and did most of the teaching as instructor and chief of clinic because of Duhring's ill

health. In 1888, Stelwagon was appointed clinical professor of dermatology at the Woman's Medical College and dermatologist to Philadelphia General Hospital. In 1890, he resigned from the University of Pennsylvania and somewhat later was made professor of dermatology at the Jefferson Medical College where he began the line of University of Pennsylvania-trained professors of dermatology in this school (Knowles, Corson and Livingood). He contributed to various journals, but his text, which was preceded by a small book for student use, was his *opus magnum* and has served, through many revisions, modern students and experienced dermatologists.

John V. Shoemaker, M.D.

Dr. John V. Shoemaker, one of the most outstanding physicians of his time, was active in writing, administration, teaching and practice. His special penchant was the sphere of administration. His only training in dermatology consisted of a brief course of lectures at Jefferson Medical College under Maury. In spite of this, he undertook the organization and direction of the Pennsylvania Free Dispensary for Skin Diseases in 1876, situated a block away from the Philadelphia Dispensary for Skin Diseases under Duhring. However, Shoemaker's enterprise was so successful that in 1880 the dispensary was moved to a four-story brick building with facilities for in-patients and was renamed the American Hospital for Skin Diseases. His writings consisted of numerous articles and eight books. Shoemaker began his teaching activities in 1883 at Jefferson Medical College, but in 1886 he accepted the professorship of Skin and Venereal Diseases in the Medico-Chirurgical College of Philadelphia. In this same institution, he was also professor of materia medica, pharmacology, therapeutics and clinical medicine. He was a zealous promoter of the Medico-Chirurgical College and finally became its president.

Henry Wile, M.D.

Dr. Henry Wile, a graduate of the University of Pennsylvania School of Medicine and a protégé of Duhring, was a pioneer in dermatologic research (Gilman). After graduation, Wile spent a year visiting European clinics. On his return, he worked with Duhring at the Philadelphia Dispensary for Skin Diseases. His special interest was in histopathology and he wrote a number of reports with Duhring. In addition, he helped in student teaching. His first published work on the pathogenesis of tumors marked him for the direction his studies were to take in the future. "Henry Wile deserves to be remembered, and will be, as a man who lived in the most exciting period of medical advance. His interests may not have been confined to dermatology, but certainly were restricted to those of pure investigation" (Gilman).

Milton Bixler Hartzell, M.D.

Hartzell, one of the "Big Six," is distinguished among other things for having been a Jefferson Medical College graduate who became professor of dermatology at the University of Pennsylvania. He served under Duhring at the Skin Dispensary of the Hospital of the University. When, seven years later, Stelwagon left for Jefferson, Hartzell was appointed chief of the dispensary. He was also staff pathologist at the Presbyterian Hospital. He prepared his own slides, some of which have come into my possession. He was devoted to research in dermatology with some emphasis on mycology and pathology. In 1912, Hartzell succeeded Duhring as professor of dermatology but continued as professor at Woman's Medical College until 1914. In 1917, he organized the Laboratory of Dermatological Research at the University of Pennsylvania, the first of its kind in America. This facility was later made famous by Frederick D. Weidman and has continued to this day as

the Duhring Laboratories of the Hospital of the University of Pennsylvania. Hartzell was a founder member of the Philadelphia Dermatological Society. He was also president of the American Dermatological Association and became patron of the Hartzell Dermatological Research Society at the University of Pennsylvania School of Medicine. Hartzell's *Diseases of the Skin* makes good reading even today. He indicated his profound interest in the University of Pennsylvania by a bequest of $100,000 for research in applied therapeutics.

Jay Frank Schamberg, M.D.

Dr. Jay Frank Schamberg, a graduate of the University of Pennsylvania School of Medicine, had much contact with the others of the "Big Six." He was professor of dermatology in three of the Philadelphia Schools (Temple, 1917–29, Jefferson, 1918–20; vice dean and professor at Graduate School of Medicine of the University of Pennsylvania in 1918). Schamberg had an international reputation, was president of the American Dermatological Association, chairman of the Dermatology Section of the American Medical Association, and an active delegate in that organization. He is famous as a teacher and an administrator. He is widely known for the description of Schamberg's Disease (a peculiar progressive pigmentary dermatosis), as well as for his studies of the "grain itch." (Dr. Schamberg told Dr. Thomas Butterworth that he would have preferred his name attached to "grain itch.") His work in syphilis, smallpox and vaccination are classics. His bibliography of papers and books was extensive. Dr. Schamberg, recognizing the need for arsenicals for therapy of syphilis during World War I when the supply was cut off from Germany, founded, with John A. Kolmer and George W. Raiziss through the generosity of Mr. P. A. B. Widener, the Dermatological Research Laboratories. Here Dr. Kolmer did his work in serology and the arsenicals for syphilis were made. This organization, now defunct, gave much to modern dermatology. The details of the accomplishments of this laboratory have been described by Friedman, by Kolmer, in the *Memoirs of Schamberg* by Weidman, by Greenbaum, and, in 1956, by Carroll S. Wright, Aaron Lichtin and Dr. Ira L. Schamberg, son of Dr. Jay Frank Schamberg.

Frederick Deforest Weidman, M.D.

Dr. Frederick Deforest Weidman (1881–1956), trained as a pathologist and interested in comparative pathology, came into dermatology through Dr. Hartzell who selected him to be the associate director of the Laboratory of Dermatologic Research at the University of Pennsylvania. This affiliation lasted thirty years (1917–47). Weidman's initial papers from this laboratory were on animals, a foreshadowing of his intense interest in comparative dermatology. He was the first, and for a long time the only, American scientist who devoted full time to basic laboratory work and teaching oriented toward the problems of diseases of the skin. He was a prime stimulus for the present nationwide interest in dermatopathology and mycology in dermatology. Dr. Weidman was a man of great erudition and warmheartedness. His stern exterior in the laboratory and during American Board Examinations belied his compassionate regard for the student. It was largely a front in his attempt to be fair to all candidates.

John Hinchman Stokes, M.D.

One of the great figures responsible for the present dynamic state of dermatology in Philadelphia was John Hinchman Stokes (1885–1961). His contributions to syphilology and dermatology set the pace for worldwide activity in these fields. His students presently occupy a number of chairs in departments of dermatology throughout the United States. Donald M. Pillsbury and Herman Beerman, two of his long-time associates, were heads of the Department in

the University of Pennsylvania. When Dr. Stokes first became seriously interested in syphilology, its status was in a difficult transition phase. Clinical syphilology was in danger of replacement by oversimplification and mechanization, serologic testing and treatment with the "magic bullet" arsenicals. Stokes was responsible for changing all this.

Philadelphia dermatology owes much to Dr. Stokes. A brief quotation from Joseph Earle Moore's evaluation gives an inkling in short space of the essence of my former chief's work: "His earlier publications in the periodic medical literature had begun to suggest that the clinical study of syphilitic infection still had much to contribute, that all of the problems of syphilis had not been solved, that syphilology as a specialty could be revivified with dignity and profit. These early suggestions were transformed into actual fact with the publication in 1926 of the first edition of *Modern Clinical Syphilology*. Here was a monumental work of nearly 1,200 pages which attested that a great clinician had arisen to fill the place left by Fournier. This book was a milestone which reminded doctors that syphilis could be neither intelligently diagnosed nor treated by reliance on the laboratory alone, but instead only by careful study of the patient as an individual, and of the biology of syphilitic infection in man and animals. By its publication, Stokes was at once established here and abroad as a master. That position he maintained, with two further editions of 'the book,' which remains the best text of its kind in any language, and with a steady flow of contributions to current medical literature. Stokes has added to his laurels as a teacher. Something of a martinet with students, he has been especially successful in stimulating the energies and inquiring minds of his graduate pupils."

Donald Marion Pillsbury, M.D.

As a modern bearer of the torch of Philadelphia dermatology, Dr. Donald Marion Pillsbury has played his role to the fullest measure. He developed further an already well-established training center and created a faculty which has attracted many students from the entire world. This attests to the wide recognition of Dr. Pillsbury's accomplishments in the areas of teaching, writing and administration. He is dedicated to the idea that only by research can dermatology advance, a view supported by the Rockefeller Foundation and expressed practically by a major grant to his department. His influence in promoting research in the Armed Services was considerable, and he was chairman or a member of at least twenty governmental agencies. His organization of the XII International Congress of Dermatology made it an unforgettable meeting. His publications are numerous and his textbook and *Manual of Diseases of the Skin* (with Shelley and Kligman) are present-day dermatological bibles.

Other contributors to the success of Philadelphia dermatology include men of great stature and productivity. Time does not permit detailing their work and careers, but this brief mention should not detract from their role in the development of Philadelphia dermatology: Herbert J. Smith, Charles N. Davis, David M. Sidlick, Abram Strauss, Henry K. Gaskill, Joseph V. Klauder, Frank Crozier Knowles, Carroll S. Wright, Reuben Friedman, Henry B. Decker, Robert L. Gilman, Vaughn C. Garner, Erich Urbach, H. Earle Twining, Norman R. Ingraham, Jr., Carmen C. Thomas, Thomas Butterworth (of Reading), Sigmund S. Greenbaum, Edward S. Corson, John B. Ludy, Leslie Nicholas, Bertram Shaffer, Patricia Hart Drant and Carroll F. Burgoon, Jr.

Presently, the dermatologic departments of the various medical schools are headed by a group of vigorous and capable young physicians: Raul Fleischmajer at Hahnemann Medical College; Herbert A. Luscombe at Jefferson Medical College; Walter B. Shelley at the University of Pennsyl-

vania; and Frederick Urbach at Temple University.

Dermatological Societies

During the past one hundred years, Philadelphia has gained distinction by being the seat of the founding of some of the important national dermatological organizations and by supplying an abundance of chief officers to all of them. Modern accounts of this phase of dermatology are well covered by Friedman, by Curtis and by Lewis.

American Dermatological Association

Philadelphia was a busy city in 1876. The Centennial celebration of the United States and the International Exposition in Fairmount Park were marked by tremendous activity. The American Medical Association and the International Medical Congress met in Philadelphia that year. On June 7, 1876, an important event for dermatology was taking place. Six men interested in this discipline came together and discussed the feasibility of establishing a national society. These men were E. W. Wigglesworth of Boston, L. A. Duhring of Philadelphia, L. P. Yarnall, Jr., of Louisville, I. E. Atkinson of Baltimore, L. D. Bulkley and G. H. Fox of New York. A notice suggesting the formation of such an organization was sent to fifty physicians in various parts of the country, and on September 6, 1876, when the International Medical Congress met in Philadelphia, a meeting was held and the American Dermatological Association was organized with 29 charter members. James C. White of Boston was elected the first president; Duhring and Robert W. Taylor were elected vice presidents. In 93 years of its existence, 84 men have been president, twelve of whom were Philadelphians: Louis A. Duhring (1878–80), Henry W. Stelwagon (1899–1900), Milton B. Hartzell (1905–06), Arthur Van Harlingen (1906–08), Jay F. Schamberg 1920–21), John H. Stokes (1936–37), Frank C. Knowles (1939–40), Joseph V. Klauder (1941–44), Fred D. Weidman (1944–46), Carroll S. Wright 1956–57), Donald M. Pillsbury (1961–62), Herman Beerman (1967–68).

The Society for Investigative Dermatology

The Society for Investigative Dermatology was conceived by three men, who, like Duhring, had returned from European study: S. W. Becker, S. M. Peck and Marion B. Sulzberger. On February 7, 1937, these three men met in Philadelphia in the office of John H. Stokes. Also at this meeting were J. V. Klauder, S. S. Greenbaum, S. M. Peck, D. M. Pillsbury and J. L. Calloway. Of its 32 years of existence, this society was Philadelphia-based for fifteen years and six Philadelphians have served as president: Joseph V. Klauder (1939), John H. Stokes (1940), Frederick D. Weidman (1944), Herman Beerman (1947), Donald M. Pillsbury (1950), Walter B. Shelley (1962). The Society, besides offering a forum for presentation of scientific work, publishes a journal which serves not only dermatologists but scientists in other disciplines. It has been a model for similar dermatological organizations in all parts of the world.

The American Academy of Dermatology

For a long time it was realized that there was a need for continuing education for younger dermatologists, especially those practising in communities remote from large centers. The opportunity to meet more experienced colleagues, to discuss problems and keep abreast of the latest developments had to be provided. To this end, the American Academy of Dermatology was founded in 1937. Although this organization was not Philadelphia-based or founded, Fred D. Weidman was on the committee of organization and of the more than thirty presidents, Philadelphia has contributed four: Pillsbury, Weidman, Beerman and Shelley. In addition, many Philadelphians have fostered the purposes of

this society by teaching and committee activities.

The Dermatology Foundation

About 1960, the American Academy of Dermatology, the Society for Investigative Dermatology and the American Dermatological Association made donations to help establish a foundation to nourish the growth of dermatology so that it will maintain its place with general advancements in medical research, the management of patients and the training of physicians. Although this foundation was based on an idea of a Californian, Dr. Nelson Paul Anderson, many Philadelphians have played important roles in the development and administration of this organization. Pillsbury and Beerman were among the original founders and board members. Pillsbury was chairman of the board. The office is now in Philadelphia and the organization has made great strides toward reaching its objectives.

Association of Professors of Dermatology

The Association of Professors of Dermatology was established in 1960 by a number of dedicated and foresighted educators in the field of dermatology. This group has functioned under the aegis and support, both intellectual and financial, of the American Academy of Dermatology and is an organization devoted to the improvement of education in all aspects of dermatology. Philadelphia has played a significant role in its founding and activities. One of its founders, Pillsbury, and two of its past presidents are Philadelphians, Pillsbury and Beerman, and a third, Shelley, is presently on its board of directors.

The American Board of Dermatology and Syphilology

The American Board of Dermatology and Syphilology was the third specialty board to be established. Urged by a letter from J. Frank Schamberg, the American Dermatological Association and the Section of Dermatology of the American Medical Association formed a joint committee which set up the essential features of the presently functioning board. Philadelphians gave much service to this activity by supplying members: Schamberg, Weidman, Pillsbury and Shelley (the latter two were also presidents of the board). The dermatology facilities of the city of Philadelphia have trained numerous fellows and residents whom this group later certified. The board has exerted a considerable influence on the present state of Philadelphia dermatology, as it has elsewhere, too, by setting high standards and criteria for departmental excellence.

The Philadelphia Dermatological Society

The Philadelphia Dermatological Society was founded about 1900 by the foremost leaders of American dermatology, including Dr. L. A. Duhring, Arthur Van Harlingen, Henry W. Stelwagon, John V. Shoemaker, Milton B. Hartzell, and J. Frank Schamberg. The early meetings were held monthly in the different hospitals. Later, they were held in The College of Physicians of Philadelphia, and in recent times at Philadelphia hospitals. As is the case now, the meetings were popular with the younger men, including some in allied fields. Thus, among those attending were E. J. Stout, Emanuel S. Gans, Harry K. Gaskill, Charles N. Davis and Herbert J. Smith. Dr. William M. Welch, for many years director of the Philadelphia Hospital for Contagious Diseases, and George E. Pfahler, a world renowned radiologist, were early members. Today the Society has more than one hundred members living within a radius of one hundred miles and the meetings are attended by more than fifty residents each month.

The Pennsylvania Academy of Dermatology

Largely because the Pennsylvania State Medical Society has all but abandoned the

specialty sections, members of the Philadelphia and Pittsburgh dermatology groups in 1967 founded a Pennsylvania Academy of Dermatology. The organization has a Philadelphian for its president, Harry Hurley, and another Philadelphian for secretary-treasurer, Charles H. Greenbaum. The avowed purpose of the Academy is to promote the education of physicians, especially dermatologists, in the diagnosis, care and cure of skin diseases, and to promote the best interest of the specialty in the Commonwealth of Pennsylvania. This Academy has a great potential. It can serve as a spokesman for all Pennsylvania dermatologists on matters of common interest. As a unit, it can lend better support to the Dermatology Foundation, whose aims include those which the Academy hopes to implement. It can attract young people in our and other disciplines to participate in dermatologic activities, present papers and compete for prizes, fellowships and other efforts of mutual interest. It is hoped that the Academy meeting will be open to all practitioners and that eventually it will branch out into formal postgraduate teaching as a supplement to the annual meeting. It is not intended to make it a competitor of the larger national academy. Dermatology always has been a clinical specialty. The ultimate test of a dermatologist is his ability to treat patients successfully. By providing for frequent consultation with colleagues, our local and regional clinical societies have contributed greatly to an upgrading in the level of dermatologic practice.

Teaching of Dermatology in Philadelphia

Undergraduate Teaching

The progress in undergraduate teaching of dermatology in Philadelphia has been considerable but not as much as desired. In this discussion, of necessity, the experience in the School of Medicine of the University of Pennsylvania must serve as the evolutionary pattern since most of the other schools were of later origin. We might say that ontogeny recapitulates phylogeny.

In his presidential address before the American Dermatological Association in 1887 on the subject of dermatology in America, J. C. White of Boston stated that when he was in medical school, "there was no special instruction given in this branch, either clinical, by textbook or lecture. All mention of the subject was of the briefest sort, as a matter of small consequence and little understood; and the occasional case seen in the clinical wards of the hospital was looked at more as an object of curiosity than of intelligent study. But a single English book on dermatology was known to the student, one from its complex and cumbersome nomenclature and its ever changing systems of classification, adapted only to impress him with the unconquerable difficulties of the study. . . . After three full years of constant attendance at school and hospital, the student was graduated doctor of medicine, with the slightest acquaintance with the names of skin diseases, with no knowledge of the doctrines and principles of dermatology and wholly ignorant of practical diagnosis and therapeutics." This state was universal in all disciplines of medicine in all schools. The only way more knowledge could be obtained was for the student to go to certain centers in Europe.

As previously stated, organized teaching of dermatology in the medical schools of Philadelphia did not begin until 1867 when Dr. F. F. Maury was appointed lecturer on venereal and cutaneous diseases at Jefferson Medical College. In the previous year, 1866, he had been designated lecturer on venereal diseases. In 1868, the first course of instruction in diseases of the skin at the University of Pennsylvania was given by Dr. H. Lenox Hodge, who repeated it in 1869 and 1870. In 1871 it was conducted by Dr. Harrison Allen. In 1871 Dr. Louis A. Duhring was appointed clinical lecturer upon diseases of

the skin and thereafter conducted the teaching of dermatology at the University of Pennsylvania until he resigned in 1910. The first course in dermatology at Hahnemann Medical College was given in 1880; at Medico-Chirurgical College in 1881; at Woman's Medical College in 1883; and at Temple University School of Medicine in 1904 under Edward Beecher Finck, lecturer on dermatology.

In spite of the development of organized courses in the various local schools, lack of time in the curriculum is an old problem. At the 1895 Baltimore, Maryland, meeting of the Association of American Medical Colleges, N. S. Davis, Jr., reported that dermatology had 25 hours of lecture or recitation exercises, out of the minimum requirements for four years' study of medicine (about 3000 total instruction hours). At the University of Pennsylvania, after the death of Duhring, Hartzell introduced investigation into dermatology and, with funds made available by Duhring, established the Laboratory of Dermatological Research with Fred Weidman as the associate director. Since Weidman's interests were in the direction of mycology and pathology, no significant increase in undergraduate education was affected by this new development although it had a great influence on graduate and postgraduate instruction. After an interim of four years during which Weidman was in charge, the school brought a rising young man, John H. Stokes, from the Mayo Clinic and the University of Minnesota where he had been making a great name for himself in the treatment and prevention of syphilis. An unrelenting taskmaster, he began an era of instruction which occupied many hours in the curriculum. Through his dynamic personality, a number of his students became trainees in his graduate program which was developed side by side with that in the Graduate School of Medicine and has existed to the present. Most of all, dermatology had attained a place in the medical firmament. After twenty years Stokes was succeeded by Donald M. Pillsbury, a Nebraskan trained by Stokes. He, too, carried on a program of undergraduate training involving a considerable number of hours, but despite a department of worldwide reputation, the hours devoted to dermatology were encroached upon and eroded to a relatively small number. Now, under the direction of Walter B. Shelley, the number of hours has been still further diminished as a result of the new curriculum changes. The decrease of teaching hours has been accompanied by an increase in investigation of a quality and quantity to surprise many another discipline. More recently, with diminution of research funds, the trend is again toward more interest in patient care and student education.

This same story can be told of all the schools in Philadelphia. It is noteworthy that three of five medical schools are the fortunate seats of fine institutions of dermatologic research: The Duhring Laboratories of the University of Pennsylvania, the expanding facilities at Hahnemann, and the exquisite set-up at Temple in its Skin and Cancer Hospital. With the continued activities of institutions such as these, the future bid for more teaching time for dermatology cannot go long unheeded.

Education in Graduate and Postgraduate Dermatology

The earliest graduate instruction in dermatology in Philadelphia was given by Duhring to Dr. Van Harlingen in 1871. Duhring was an especially effective teacher in small classes. In 1876, Shoemaker gave instruction in dermatology in the Pennsylvania Free Dispensary for Skin Diseases. During the first year, the amazing number of 190 physicians and students studied dermatology from the cases in the dispensary. In the second year, the number was 203, 72 of whom were doctors of medicine. Didactic and clinical lectures were given in two courses. This instruction was continued

when the dispensary became the American Hospital for Skin Diseases in 1883. Shoemaker also gave postgraduate instruction at Jefferson Medical College. Formal courses of graduate instruction in dermatology were first given when the Philadelphia Polyclinic Hospital and College of Medicine was established in 1884 with Arthur Van Harlingen as professor. The Graduate School of Medicine of the University of Pennsylvania was created for graduates of medicine in 1919 following the absorption by the University in 1916 of the Medico-Chirurgical College and Hospital and in 1918 of the Polyclinic Hospital and College. The Graduate School course in dermatology was headed by Schamberg from 1920 to 1934, by Weidman from 1934 to 1946, by Pillsbury from 1946 to 1949, and by Beerman from 1949 to 1968. In 1966, the school was abolished and its activities were absorbed by the Division of Graduate Medicine of the School of Medicine. Presently, as part of the School of Medicine, it is headed by Walter B. Shelley.

The question of how much has been accomplished by Philadelphia postgraduate instruction is answered fully by noting the number of heads of departments who have gone through this training and how many of the United States dermatologists are Philadelphia-trained. Of the five Philadelphia Schools, four, formerly five, have had at the head of dermatology persons trained at the University of Pennsylvania.

The status of post-graduate and graduate dermatologic education is in a continuous state of flux and has received the attention of two recent workshops of the Association of Professors of Dermatology.

Institutions Founded by Philadelphia Dermatologists

Numerous dermatology institutions were established by Philadelphia dermatologists. A number of these have been mentioned previously: Philadelphia Dispensary for Skin Diseases, Pennsylvania Free Dispensary for Skin Diseases, Philadelphia Hospital for Skin Diseases, Dermatological Research Laboratories (subsequently Research Institute of Cutaneous Medicine), Laboratory of Dermatological Research at the University of Pennsylvania, Skin and Cancer Hospital, and the Institute for the Control of Syphilis. The Duhring Laboratories (formerly Laboratory of Dermatological Research) were incorporated within the structure of the Dermatology Department of the University of Pennsylvania by Pillsbury. In this facility many of the investigations by Walter B. Shelley, Albert Kligman and Peter Flesch were carried out. Its story merits future telling.

The Institute for the Study of Venereal Disease

The Institute for the Study of Venereal Disease, with Dr. John H. Stokes as director, was organized in 1936 under the sponsorship of the University of Pennsylvania, the Pennsylvania State Department of Health and the United States Public Health Service. Utilizing exceptional facilities, it attained a nationwide reputation as a training center. The Institute accumulated a large experience in meeting the needs of the physician, the health officer, the armed services medical officer, the public health nurse and the social worker already employed in the venereal disease control field or contemplating placement in it. In addition, it gave training to more than 1,100 individuals interested in teaching, health counseling, sex education, and health and human relations. The Institute supervised, coordinated, provided facilities and acted as principal investigator for research in the venereal diseases. Notable examples have been the extensive investigations of the Penicillin-Syphilis Panel of the University of Pennsylvania from 1944 to 1954, on penicillin in various aspects of syphilis: in neurosyphilis, in the pregnant woman, in the infant, cardiovascular syphilis, and early syphilis. Under the office of

Scientific Research and Development Committee on Medical Research contracts, studies in serology and in the biologic false or non-specific positive serologic reaction of the blood were conducted and reported in many publications. It provided courses for medical administrative venereal disease control as well as clinic personnel. These courses were also intended for public health nurses, senior nurse epidemiologists, contact-tracing and attendance follow-up workers. A course in health and human relations was offered for primary, secondary school, and university teachers, school and health counselors, venereal disease control workers, ministers, chaplains, public health nurses, school nurses, social workers, law enforcement officers, etc. Dr. John H. Stokes retired from his position as director of the Institute for the Study of Venereal Disease at the close of 1952. Dr. Norman R. Ingraham, Jr., was appointed director of the Institute effective January 1, 1953. The existence of the Institute was discontinued for a variety of administrative and other reasons in 1954. From its origin in 1936, the Institute had been a coordinating agency and this became even more apparent after 1950. The research program was largely carried out under the direction of the Department of Microbiology, Neurology, Schools of Nursing and Education and not by the Department of Dermatology. The Institute for the Study of Venereal Disease served its purpose excellently. Its passing reflected the changing emphasis on venereal disease control and its integration into generalized health programs.

The Skin and Cancer Hospital of Philadelphia

The Skin and Cancer Hospital of Philadelphia, organized in 1927 through the initiative of Dr. Albert Strickler, has contributed much to Philadelphia dermatology. It presently represents a magnificent unit with a group of workers pursuing research in basic and clinical aspects of dermatology. Strickler, according to Friedman, "succeeded in establishing an institution such as Philadelphia's immortal Louis A. Duhring had dreamed of creating but did not and such as Duhring's great contemporary, John V. Shoemaker, actually did create but permitted, some seven years later, to pass out of existence when he became clinical professor of skin diseases at the Medico-Chirurgical College. Indeed, Dr. Strickler succeeded in founding an institution such as but few dermatologists in America ever thought of establishing and he did it, furthermore, practically single-handedly. Actually he could not possibly have carried out his objectives without the active and wholehearted support and cooperation he received from the splendid group of public-spirited and philanthropic citizens he had gathered about him, who comprised the officers and board of managers of the institution and who did so much to obtain its charter and to insure its continued existence." The Skin and Cancer Hospital received its charter in 1928. Mr. Edgar B. Moore served as president from its founding until 1946 when Mrs. Carroll S. Tyson, Jr., became president. Mrs. Tyson and her husband had devoted much time and considerable monies to this project. Dr. Strickler resigned in 1947 and in that year, under the presidency of Mr. Morton Jenks, the University of Pennsylvania and Temple University assumed joint responsibility for the medical direction. Drs. Carroll S. Wright and Donald M. Pillsbury became co-medical directors. In 1952, the Skin and Cancer Hospital became affiliated with the Graduate School of Medicine of the University of Pennsylvania. This affiliation lasted until the end of 1953 when Temple University took over. The institution was under the medical direction of Dr. Bertram Shaffer until July 7, 1953. Dr. Morris H. Samitz served as medical director from July 8, 1953, to April 30, 1954. From May 1, 1954, to September, 1954, Dr. Reuben Friedman

was acting medical director. He was succeeded by Dr. Eugene F. Traub. Since then, the Skin and Cancer Hospital has occupied its present outstanding facility on the Temple University campus.

The Skin and Cancer Hospital concept was founded in keeping with the institute idea: facilities for out-patients, in-patients, research and teaching incorporated into one unit. The physical facilities were enhanced in 1931 by a gift of $125,000 from Mr. and Mrs. Carroll S. Tyson, Jr., and the well-equipped building at 800–806 Pine Street was erected. This interest has been perpetuated by the chairman of the board, Mrs. Barbara K. Tyson, and her husband, Charles R. Tyson.

Presently, the Skin and Cancer Hospital, under the direction of Frederick Urbach and his staff (Carroll F. Burgoon, Jr., its immediate past director, James H. Graham, now in California, Waine C. Johnson, Fritz Blank, and Eugene Van Scott), a truly great Philadelphia institute has come to fruition. Nowhere else in our city are there such excellent facilities. The combination of good men and fine facilities will help raise Philadelphia dermatology to newer heights.

Conclusion

It is time now to evaluate the status of Philadelphia dermatology. Even at the vantage point of one hundred years after it all started, one cannot expect a valid perspective. However, in comparison with her older sister, New York dermatology, the results are gratifying. One can say with verity that the present crop of Philadelphia dermatologists, even including those imported from across the United States, has done the founder of Philadelphia dermatology, Louis A. Duhring, proud.

Etiology, Pathology and Treatment of Chorea in the Nineteenth Century

By JOHN S. HALLER, Jr.*

"Chorea has been and is one of the pathologic dumping grounds of the medical world; and many a man has spent tireless hours in medical research, to find a remedy which will relieve this troublesome disorder. In this space the theorist throws his theory; the pathologist his odds and ends; the moralist adds a few of his trite sayings; and as a result there is a stupendous wilderness of unknown depth and uncertain quantity. No one has penetrated successfully this wilderness; and many have tried, and if no other good has been done, the ground has been almost covered with their failures; so that before long we will be able to traverse the entire field by passing from one failure to another. Each man can go a step farther than his predecessor, by using as stepping stones the perished efforts of those who have gone before."

Henry Hatch, *Journal of the American Medical Association,* 1896

IN 1801, Philadelphia tailor John Magnus complained of convulsive motions of the head and hands, and, suspecting that his problems were symptomatic of a recurring syphilis, sought medical attention. He was told to abstain from liquor, to take regular exercise and avoid costiveness. When the symptoms continued, however, his doctor then prescribed Glauber's salts, aloetic pills, bleeding, purges with jalap and calomel, head baths of stramonium boiled in vinegar, and poultices applied to the feet. When these efforts failed to bring relief, a wash of sugar of lead and white vitriol, leeches applied to the temple, and opium and calomel pills were added to his already burdening medication. The bleedings weakened Magnus, "leaving him stupid for upwards of a day," and his physician then turned to cupping, more cautious use of the lancet, snake-root, blisters, and antimonial powders. The tailor failed to respond to treatment, and doubting the professional ability of his doctor, placed himself in the hands of physician John R. Coxe, who promptly prescribed the continuance of the antimonial powders, small doses of camphor, cups applied to the temple and neck, and large blisters to the head. Coxe also salivated his patient with mercury. When Magnus failed to respond, Coxe turned to daily bleedings of 18 to 20 ounces and frequent doses of a concoction made of phosphorus, laudanum, white sugar, gum arab, and cinnamon. Unfortunately, the convulsions grew worse and Magnus complained of sore gums and loose teeth as a result of the mercury treatment. It was only then that Coxe diagnosed what he believed was the real problem, and immediately set out to bleed Magnus, "but could not obtain more than two or three teaspoonfuls of blood." He turned to alternate doses of white vitriol and tartar emetic, double doses of castor oil, rhubarb, cataplasms on the feet, and enemas, and continued his efforts to bleed. When Magnus died, Coxe regretted he had not diagnosed the symptoms earlier; but, convinced that the tailor had suffered from the disease Chorea Sancti Viti, he considered himself properly prepared for the next such case (1).

The term chorea, which came from the Greek word χορεια, to dance, became a fashionable medical term during the fourteenth and fifteenth centuries when areas of Germany and the Netherlands were inundated with hysterical epidemics of dancing and shaking. The "tanzwuth," as it was called in Central Europe, caused entire towns to

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be seized with the mania. Similarly the victims of "tarantulism" in Italy, who were supposedly bitten by a spider (a species of tarantula), danced until they were lulled to rest by the sound of music. "Under the influence of these hysterical epidemics of chorea," wrote a nineteenth-century medical investigator (2), "the strength was enormously increased for the time being, so that weak, frail women had to be beaten with iron bars to bring them out of the controlling influence of the supposed deamon." While some fifteenth-century physicians considered the affliction paralytic in nature, most were inclined to blame the "devil's dance" on witchcraft. Hysterical chorea was also a ritualistic aberration among certain religious sects whose dancers and shakers interpreted their neurotic disturbances as retribution by God for their sins. Its victims sought recovery by announcing conversion, taking vows, making penance, or embarking on pilgrimages (3). In 1418, in the city of Strassburg, magistrates ordered the religious dancers to enter the chapel of St. Vitus and pray for deliverance. It is from this original experience of having danced and jerked through the night and being delivered of the affliction by morning that the disease became known as "St. Vitus's Dance," or "Chorea Sancti Viti." In other parts of Europe, the dancing condition was known as "St. Modestus' Dance," "St. John's Dance," "St. Guy's Dance," "St. Wiet's Dance," and "St. Anthony's Dance," since each of these saints was alleged to have cured the sickness. These convulsive outbreaks, wrote an English physician (4) in the 1860's, were manifestations of exaggerated and epidemic hysteria which recurred at intervals throughout history in connection with religious movements. They were prevalent in the Kilsyth and Cambuslang revivals, in the epidemic of "Leaping-ague" in Scotland described in Sir John Sinclair's *Statistical Accounts,* and in the religious revivals of 1751 and 1796 in both England and America. Later, in the early part of the nineteenth century, outbreaks occurred in the Shetland Isles and in parts of Cornwall and Wales.

Despite the religious etiology commonly assigned, there was evidence as early as the seventeenth century that chorea could not be so restrictively delineated. In 1686, English physician Thomas Sydenham (1624–1689) noted significant psychical and pathological differences (5) between the religious convulsions (which the Germans denoted as chorea Major) and that choreic (Minor) movement "which chiefly invades boys and girls from ten years of age to puberty, showing itself by a certain lameness or rather instability of one of the legs, which the patient drags after him like a fool." The latter disorder, unlike the hysteria related to the revivals, appeared "to proceed from some humours thrown upon the nerves, which, by their irritation, excite the preternatural motions." The most general symptom was the limping gait usually marked by dragging one foot after the other. This, in turn, was followed by the involuntary motions of the arms and muscles of the face and neck. The face presented a "hideous grimace" and its contractions, as well as the motions of the extremities, continued incessantly except during sleep. In some cases, the contractions occurred only when the person attempted to speak or move; in these situations, the patient had "a temporary respite from all the symptoms by quiescence of mind and body."

On the basis of Sydenham's criticisms, later physicians divided chorea into a variety of groups, not so much because they indicated a separate disease, but on the basis of symptomatology and the time of life when the disease appeared. By the close of the nineteenth century, there was an almost endless list of choreic appellations, with physicians adding innumerable peculiarities to those already accounted for in medical books. Some of the names included melancholia saltans, paralysis vacillans, krubel-krankheit, ballismus, epilepsia saltatoria, scelotyrbe, shouting-mania, malleatio,

orchestromania, choreumania, electric chorea (Dubini), hereditary or Huntington's chorea, senile chorea, chorea of pregnancy, athetoid or undulatory chorea, and poretic chorea.

Despite Sydenham's remarks, however, the lack of proper choreic delineation persisted into the nineteenth century. In 1805, for example, Tennessee physician Felix Robertson (6) submitted an inaugural thesis to the medical faculty of the University of Pennsylvania on the religious nature of the chorea epidemics that prevailed among the Presbyterians in Kentucky and among the Baptists and Methodists in Tennessee and Virginia. Robertson's opinion was that the first appearance of chorea began with the "blaze of enthusiastic religion" which burst forth among the revival camps in the neighborhood of Maryville, Tennessee, during the summer months of 1803:

"This religious enthusiasm travelled, like electricity, with astonishing velocity, and was felt almost *instantaneously,* in every part of the States of Tennessee and Kentucky. It often proved so powerful a stimulus that every other entirely lost its effect, or was but feebly felt. Hence that general neglect of earthly things which was observed, and the almost perpetual attendance at places of public worship. Their churches are in general small, and everyone was uncomfortable; the concourse of people on days of worship, particularly of extraordinary meetings, was very numerous; and hundreds who lived at too great a distance to return home every evening, came supplied with provisions, tents, etc., for their sustenance and accommodation during the continuance of the meeting, which commonly lasted from three to five days. They, as well as many others, remained on the spot day and night, the whole or greater part of this time worshipping their Maker almost incessantly. The outward expressions of their worship consisted chiefly in alternate crying, laughing, singing and shouting, and at the same time performing that great variety of gesticulations which the muscular system is capable of producing. It was under these circumstances that some found themselves unable by voluntary efforts to suppress the contraction of their muscles; and to their own astonishment, and the diversion of many of the spectators, they continued to act from *necessity* the curious character which they commenced from *choice.*"

Some adults of sixty years of age were touched by the convulsions, but Robertson noted that those normally experiencing the phenomenon were children (usually female) around the age of puberty.

Because of the religious nature of the affliction, few of the persons disposed to the convulsive motions appealed for medical aid. Those who did were treated with internal stimulants and rubefacients applied over the entire body. Most chose to 'doctor' themselves by consuming large quantities of alcohol at the commencement of the paroxysms. Robertson believed (7) that the best treatment consisted of diverting the patient's attention to "agreeable subjects" and encouraging a trip with a suitable companion "through a highly cultivated or wild mountain country, visiting natural and artificial curiosities, particularly of the more sublime kind." Normally these newer associations (and with them, the newer associative motions of brain and muscle) would divert the patient's attention and overcome the disease.

The reason behind Robertson's therapy, which contrasted sharply with the more popular drug-oriented cures of the late nineteenth century, stemmed from his understanding of the nervous system. First, the nervous system was so organized that, when acted upon by an external stimulus, the body could take on "an infinite variety of motions which constitute . . . ideas of matter and its properties." Second, the nervous system enabled the brain to repeat a series of motions "in the same order in which they had previously been performed." Third, the muscles contracted "through the medium of the nerves, by sympathy of motion, and not . . . by secreted sensorial power." Lastly, "every phenomena of the animal (and vegetable) creation results from motion produced by the operation of one portion of matter upon another." From these premises, the Tennessee physician concluded (8) that the brain, acting with the aid of stimuli, precipitated the convulsive motions of chorea and that without the

brain's performing its function, the muscles would remain quiescent. Since chorea was produced by stimuli on the brain, it persisted only as long as the exciting cause was applied. Thus, when the revival camps became crowded with persons highly stimulated by "the alternate hope and fear of future reward and punishment," religious enthusiasts who gathered around the afflicted person soon manifested similar convulsive motions "through the medium of the principle of imitation." By removing the person from his religious environment and by forcing him to make newer associative motions of brain and muscle, Robertson hoped to bring about cure.

In seeking to determine the etiology of chorea, nineteenth century physicians (9) tended to look among all the dirty linen in Pandora's box. Some suggested such things as improper and indigestible articles of diet, hereditary influences, cardiac disease, sexual desires, healing of old ulcers, confinement in poorly ventilated rooms, sewer gas, eye-strain, lack of proper exercise, excessive tea drinking, "improper directions of the moral feelings," and irritation from dentition. Others pointed to fright, anger, over-taxing the mind with study, irritation or inflammation of the genital organs, spinal irritation from worms or disordered secretions, wounds or injuries about the head, and problems such as nasal catarrh, malaria, masturbation and spring fever. Few believed that chorea was produced by physical causes, except those that were peculiarly operative upon the brain and nervous system (10). According to C. C. Wyckoff, president of the Buffalo Medical Association in 1858, chorea depended upon "a depraved or poisoned state of the blood." The localization of spasmodic actions to a particular side or a single limb, or to the muscles of the tongue, were consistent with the laws governing morbid poisons (11). Less than two decades later, St. Louis physician Edward Montgomery (12) called chorea an "insanity of the muscles" and blamed its prevalence on the indolent and sedentary condition of the city's children who were confined in public schools, nunneries and convents, and who seldom enjoyed outdoor exercise. "There is little doubt," he wrote, "but that the overcrowding in our schools, the indolent and sedentary lives of the majority of our children, and their want of appetite and consequent anemic condition, are very prolific causes of this affection." William Dale (13) in 1891 blamed chorea on brain-pressure, a result of the excessive demands of female education on delicate boarding-school girls. But while Montgomery and Dale looked to the inadequacies of the school environment, others (14) pointed out that chorea was most common among the working classes of the population who were "ill fed, ill bred, the degenerated products of poverty, lust and syphilis, reared on tea, with a dash of alcohol."

According to John Coxe (15), who administered to the unfortunate tailor, chorea could be blamed on the chronic state of hydrocephalus internus. Normally, he wrote, hydrocephalus attacked children, although it was not uncommon in adults. Often, it followed inflammatory fevers in which the head was affected, accompanied too-rapid growth of the body in early life, or resulted from the "sudden check to accustomed secretions." He objected to the popular belief that chorea was the product of worms, especially in young girls. He could not believe that a dozen or so worms in a child could induce such characteristic convulsions. "I fear many children are carried off by dropsy in the brain," he wrote, "whilst the anxious parents are trying every remedy, public and private, to remove worms, which exist only in their own brains."

"It may be asked, also, why chorea is not, in general, a fatal disease, if it arises from dropsy of the brain? This, I think can only be explained upon the principles of habit; the slow deposition of the fluid in the ventricles allowing the brain to accommodate

itself to the burden. When death occurs in chorea, it seems to me probable that it arises from sudden increased determination to the vessels of the brain, producing either a kind of acute hydrocephalus, or an engorgement of the vessels themselves; in either case inducing apoplexy. It is to be observed that, although the brain was habituated to a certain degree of distention, yet any sudden addition to that must act precisely as if such habit had never been acquired."

David Reese, professor of the theory and practice of physic and clinical medicine in the Albany Medical College, commented in 1839 that chorea attacked the weak and delicate of both sexes at the age of puberty (16). While he agreed with most other clinicians that girls suffered more from the disease than boys, he was unsure of the specific reason for this phenomenon. He suspected, however, that the cause might be due to the retention of catamena, or the too early or delayed development of the uterine organs. "This hypothesis," he wrote, "receives confirmation from the fact that the disease terminates immediately on full menstruation and has been known to resist all treatment until this period." Reese believed that chorea prevailed among those persons most susceptible to fright, anger, religious fanaticism, disappointed love, and other emotional catalysts. Anticipated or delayed puberty, suppressed discharges, pregnancy, vegetable and mineral poisons, and sexual indulgences "accompanied by remorse of conscience, dread of exposure, and fruitless lamentations" were also known causes of chorea.

Because Reese made no distinction between Sydenham's chorea and chorea minor, he accused the Shaker communities in western New York of concealing numerous chorea cases. While many Shakers were in excellent health and although all of them participated in the shaking and dancing exercise, according to Reese, "a medical observer can readily distinguish the individuals who suffer under this disease, by very obvious diagnostics." Furthermore, he pointed out, "numerous instances are on record of this disease being communicated by the force of example, the propensity of imitation, or a species of moral sympathy." On the basis of the factor of sympathy, he rejected the popular use of depletory and counter-irritant medicants, and like Robertson before him, recommended isolation or total seclusion of the patient from parents and friends (17).

Harry Hatch of Illinois, on the other hand, theorized in 1896 that chorea was primarily a hereditary disease and suspected that alcoholism was the most prominent factor in its origin. This was especially the case, he argued, "when a woman becomes impregnated by her husband when in a drunken debauch." Hatch also believed that persons addicted to opium or suffering from pulmonary tuberculosis transmitted their "vitiated constitutions" to the child in the form of chorea. Epilepsy or migraine headaches in a parent were likewise inciting causes of chorea in the child. "We can not say, properly speaking, that chorea is inherited," he wrote, "but we can say that either its vitiated constitution is inherited from a parentage which is not healthy or that it has a choreic tendency. . . . Arising perhaps from one ancestor, say a maternal grandmother, who may have had a clear history so far as ascertained," he added, "it manifests itself in one or more members of the family, usually choosing the one whose nervous organization most closely resembles that of the ancestor, a lasting heritage from one generation to another generation." Hatch's theory merely confirmed the earlier opinions of physician George Huntington (1815–1916), whose article in the *Medical and Surgical Reporter* in 1872 had pointed to the peculiar nature of chorea among certain families in Long Island (18).

Octavius Sturges, writing in the *Medical Times and Gazette* in 1877, suggested a correlation between chorea and mental development. Idiots, for example, were epileptic but not choreic. Furthermore, "children away from civilization and who are suffered

to grow up in their own way, with little or no training, are indisposed to take chorea." Medical statistics in remote areas showed almost no cases of chorea. Similarly, he felt that "when young women of a humble class are receiving with ill-concealed satisfaction the addresses of their lovers, their emotion overflows in chorea." Choreic tendencies among young women of the "educated classes," on the other hand, became evident in their animated conversations as well as in their purposeless muscular motion such as "fumbling a chain or a locket." Among the males of all classes, Sturges pointed to the habit of "crumbling of one's bread at dinner" as choreic (19).

The most attractive theory in the nineteenth century held that rheumatism was the most frequent cause of chorea. The first hints of a relationship between chorea and rheumatism occurred in the *Syllabus of Lectures on Practice of Medicine* (1802), anonymously published for the students of Guy's Hospital. Later, cases were documented by Copeland in the *London Medical Repository* of 1821. Explanations of rheumatic diathesis varied from one doctor to the next. In 1847, J. Begbie (20) tried to show that the two diseases were really quite different although they both depended on "blood poisoning—probably the same poison acting differently under different circumstances." Some suggested that chorea was actually rheumatism of the brain or spinal cord. Others believed that rheumatism caused anemia which in turn debilitated the system and predisposed the person to chorea. Several British observers attributed chorea to capillary embolism. Dr. Stenhous Kirkes, who originated this particular theory, suggested (21) that the disease was "the result of irritation produced in the nerve-centers by fine molecular particles of fibrin, which are set free from the inflamed endocardium and washed by the blood into the cavities of these centers." James Frederick Goodhart of England, in his *Diseases of Children*, pointed out that the vegetations were washed off the valves of the heart and into the blood current where they were carried into the smaller arteries, producing local anemia, malnutrition and degeneration of the cerebral cortex and ganglia, and loss of control over the muscles (22). The embolic theory was further elaborated upon by Hughlings Jackson, who argued (23) that the emboli were "lodged in the vessels of the nerve-tissue forming the convolutions near the corpus striatum, the blood supply of which is derived from the middle cerebral artery, and that a condition of defective nutrition was induced from a diminished supply of blood." The embolism theory was given wide publicity after the experiments of Angel Money, who introduced minute particles of starch and grains of carmine into the hearts and blood vessels of animals, and artificially produced capillary embolisms in the brains and spinal cords (24).

There were numerous physicians who objected to the rheumatism theory on grounds that it was too restrictive. If embolism were present because of the plugging up of the minute cerebral arteries, then, argued some critics, the convulsive movements would be constant, not occurring only when the patient was awake. Others argued that not only did the rheumatism theory fail to explain cases due to fright and anxiety, but that there were innumerable cases of chorea where there was no evidence of acquired or inherited rheumatism. Furthermore, choreic movements "almost always precede the affections of the joints and heart, seeming to be the cause and not a consequent of the rheumatism." Statistical evidence available on rheumatism pointed to the additional fact that localities which evidenced a high percentage of rheumatic victims did not have any unusual number of chorea cases. Chorea was also a childhood disease and occurred more often among girls than boys. Rheumatism, on the other hand, was a disease of later years, and statistics seemed to indicate that there were a greater number

of male cases than female (25). Still others disagreed with the theory and suggested that the cause of chorea might well be due to irritation in the thalamioptici, corpora quadrigemina, pons Varolii, in the medulla or the spinal cord, and in the corpora striata. According to New York physician Edward C. Mann (26), chorea developed from a "morbid irritability of the nervous centers, and . . . in the subsequent cause of the disease, any or all parts of the nervous centers may become involved in an inflammatory process, but not necessarily so." Octavius Sturges (27) believed that the so-called evidence of rheumatism was simply "growing pains" and other "unscientific disorders" which were part of the growth years in children. Others claimed chorea was an infectious disease dependent upon a specific germ.

While H. C. Wood (28) accepted the fact that chorea was often complicated by either functional or organic cardiac trouble, due to the morbid condition of the valves and muscles of the heart, or perhaps to the anemic nature of the blood, he nonetheless questioned the validity of the embolic theory. Nearly all of the cases of chorea minor were cured, he wrote, and "this would not be the case if no serious and organic lesion lay at the root of the disease." If, as the supporters of the embolic theory stated, there was a stoppage, by emboli, of the minute arteries of the corpora striata and of the cord, then it seemed to Wood that the percentage of cure would hardly be as high. For this reason, he was inclined to regard chorea, particularly among children, "as functional neuroses, often associated with a rheumatic diathesis due to the presence of the rheumatic poisons in the blood, together with a lower state of the nervous system brought on by anemia, impairing the nutrition of the nerve-centers." In older women, on the other hand, he ascribed chorea to problems related to the sexual organs and to hysteria.

There were as many forms of treatment for chorea as there were etiological theories. Physicians searched the pharmacopoeia for any number of purgatives, tonics, counter-irritants, and anti-spasmodics. Some first preferred to remove the exciting cause of the disease by bleeding the patient or applying cups or leeches along the spine. Sydenham recommended alternate bleeding and purging with tartar emetic in the belief that general plethora or local congestion were the causes of the choreic irritation. Hamilton, who believed that the collection of feculent matter in the bowels caused chorea, subscribed fully to purgation, contending that only a cathartic treatment would remedy the disease. Others equally concerned with purgation employed cathartics such as the fluid extract taraxacum and senna, calomel combined with rhubarb or jalap, and castor oil. In difficult cases, turpentine was used, sometimes combined with castor oil or senna. Others preferred tartar emetic. When counter irritation was desired, physicians applied blisters along the spine, pustulation by croton oil, or friction with tartar emetic ointment. This was then followed by both mineral and vegetable tonics such as Peruvian bark, chalybeates, arsenic and zinc, and the proto-carbonate of iron given in syrup. The Cullenian school relied on cinchona and its preparations, principally quinine. Sir Thomas Watson employed both local bleeding and iron, while in France, Trousseau introduced strychnia in doses of 1/28 gr. which he pushed until the patient showed signs of its specific effects, such as the twitching of the toes or the stiffening of the spinal cord. Edward Mann, on the other hand, prescribed phosphated cod liver oil, and C. B. Radcliffe (29) of England introduced arsenic treatment around 1866 by injecting Fowler's solution into "the most tender point over the contracting muscle." Others, who objected to stimulants and sought to rest the nervous system, turned to narcotics. Opium, chloral hydrate, chloroform, belladonna, hyoscyamus,

stramonium and bromide potassium were popular remedies to quiet the muscular spasm and encourage sleep. Erasmus Darwin appeared to combine a variety of theories by treating his patients with calomel, steel, bark, warm and cold baths, opium, venesection, and electricity. Still other remedies in the nineteenth century included conium, ergot, sulphur and electric baths, static electricity, leeches applied to the vulva or anus, aloetic aperients, camphor, musk nitrate of silver, and black snake root (30). H. C. Wood prescribed dracontium or skunk cabbage, while Charles L. Dana, Rockwell, and George M. Beard used galvanization of the brain, and Baunis and Bernheim employed hypnotism (31).

Current medical description of Sydenham's chorea has not significantly changed since the classic work of William Osler (32) in 1894 which defined chorea as "an acute disease of childhood, rarely of adults, characterized by irregular movements, a variable amount of psychical disturbance, associated very often with arthritis or endocarditis." Furthermore, according to a team study (33) by New York physicians at Columbia-Presbyterian Medical Center in 1965, the etiology of chorea "is difficult to establish, its pathology nonspecific, its pathophysiology obscure, and its treatment empirical." While the rheumatic origins of chorea continue to dominate medical thinking, the precise relationship between chorea and rheumatic fever remains difficult to demonstrate. Although it has been shown that beta hemolytic streptococci is an important factor in the genesis of Sydenham's chorea, it appears likely that more extensive study is needed of streptococcal infection, arthritis, carditis or vavular disease, certain genetic factors, and the patient's emotional disposition, before further conclusions can be drawn (34). At best, it appears likely Lessof's remark (35) in 1958 that "the occurrence of chorea implies a risk of rheumatic carditis without saying that all chorea is rheumatic" will continue to challenge those physicians who find it difficult to live with loose ends.

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A Multiplicity of American Pharmacy Schools from 1870 to 1900, Including a Directory

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THIS paper will review briefly those forces which dominated pharmaceutical education during the period from 1870 to 1900. Next, the problems in obtaining and interpreting data about early pharmaceutical schools will be discussed. Table I comprises early listings of schools, colleges and departments of pharmacy. Finally, a composite list of institutions derived solely from various published reports has been compiled.

The ultimate analysis of a school reveals four essentials, two persons and two things. These are the institution, the teacher, the student, and the lesson. When investigating the period in American pharmaceutical history encompassing the last three decades of the nineteenth century, one of these four essentials, the institution, proves most difficult to research. Areas of interest such as the assets of a school of pharmacy, its receipts and expenditures, its endowments and supporting funds are often a sealed book for this period. The statistics obtained are sometimes incomplete, often wholly absent, and at best very unsatisfactory. Thus, we find that while historians have reported at length on the schools and colleges of pharmacy which opened their doors during the 1870s, 1880s and 1890s, their reports have revealed considerable disagreement concerning which institutions to include and which to omit.

During this era large numbers of schools and colleges of pharmacy were organized in the United States. While many of these schools were founded in a spirit of service, others were frankly commercial in their objectives. Of this commercial group some have been characterized as "defunct and unsavory."

Concern and criticism over standards in pharmaceutical education were not lacking during this period. In 1884, the journal *American Druggist* (1) commented editorially as follows:

> "We hope that the schools already established will appreciate what seems to us self-evident, that the best way to secure their own prosperity and prevent the organization of poorly equipped competitors who will surely underbid them in fees, is to urge the enactment of laws which shall take no account of the existence of pharmaceutical schools but subject every applicant for a license to a fair examination."

If such laws were enacted, the editorial continues, "old and well-tried schools will flourish and new ones will be discouraged." The editorial concludes that pharmacy colleges will in this way "escape the opprobrium which has been bourne by the medical schools, of having their diplomas counted as so much paper because of the difficulty of knowing what schools are good and what schools are fraudulent."

A decade later the journal *Pharmaceutical Era* (2) commented upon the pharmaceutical association schools then in existence, noting, "There are several now which are weak, struggling affairs, held back by lack of funds, imparting poor instruction through ill-paid professors, and graduating young men with a superficial, unsound education." Another comment (3), made in 1895, noted the proliferation of pharmacy schools in the United States: "In the State

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of Ohio there are no less than seven schools, and the condition of affairs is somewhat similar in other States. The students usually go to the college where they can get through the quickest. The 'diploma mills' are therefore largely patronized."

The corporate members of the commercial or proprietary colleges of this period were mainly pharmacy owners and they, together with the pharmacist instructors, provided lectures for their apprentices to supplement the education which could be obtained by service in the store. In reviewing the establishment of these schools wherein pharmaceutical education was deemed not so much education as it was pharmacy, Fischelis (4) commented:

"In 1870 the first attempt was made to organize an association of pharmacy college faculties. It is said that the principal objective of this organization was to take protective measures against the encroachment of universities into the field of pharmaceutical education. Evidently those in control of the independent schools of that day were still fearful of the control of pharmaceutical education by influences outside the drug business."

However, the "encroachment of universities" could not be halted. With the advent of the state university schools, the "university view" of pharmaceutical education slowly gained support. One champion was John Uri Lloyd (5) who asked: "To what end are the great university classes in pharmacy trending?" He replied that university training would prepare the pharmacist "not to manufacture medicines but ably to select them; not to put together, but to watch that which they purchase and which they guarantee to their patrons; not to compound so much as to test and establish what is compounded. To this end education points, and it must be higher than was ours."

Ultimately the development of the state board examination resolved the problem of dealing with both the science of pharmacy and the practice of pharmacy for the few who sought formal schooling during these years. These graduates, it should be stressed, were but a distinct minority of those who were registered annually as pharmacists. Beal (6) reported in 1898 that "according to the best information obtainable from boards of pharmacy, graduates do not number more than about ten percent of the total of those who are annually registered in the United States."

The schools and colleges were likewise under criticism from those historians attempting to obtain meaningful data during this period in order to report accurately the breadth of pharmaceutical education in

TABLE I

NUMBER OF AMERICAN SCHOOLS OF PHARMACY IN EXISTENCE FROM 1872 TO 1900

Source	To 1875	1887	1891	1894	1896	1898	1900
1.	25 (1875)						
2.	12 (1873)	25	33				
3.	14 (1872)	29	38	46	52	58	65
4.				27			
5.					47		
6.	15 (1874)	27	32	39	41	45	47
7.	13 (1872)		38	44	51	54	58
8.	16 (1873)	33	41	52	54	60	64
9.						56	

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* Schools listed without opening dates are in the 1891 tally only.

** Schools listed with questioned opening dates up to 1900 are tallied by those dates. Schools listed without opening dates are excluded from the table.

these times. In 1895, the *Pharmaceutical Era* (7) sent requests to the colleges for information beyond that included in their catalogs. Answers were received from nearly all. The *Era* notes that, with respect to some of them, its knowledge was no greater than it was before. In that survey there were eight colleges for which no data had been obtained. A few years earlier the *Pharmaceutical Record* (8) published a list of colleges of pharmacy but omitted those for which the year of their establishment could not be positively identified. Scoville (9) has chosen to include the "problem schools" in his list, indicating his incomplete data in two ways, either with an estimated year followed by a question mark or with no year given at all. Beal (10) reported entering into correspondence with 52 institutions from a list published in the journal *Western Druggist*. Despite sending two or more letters of inquiry to the secretary of each institution together with assurances that their answers would not receive publication, he reported that no reply was obtained from nine colleges.

If historians were beset with problems in trying to obtain data from schools, they surely must have been vexed and frustrated in their efforts to evaluate the statistics available to them. Taylor (11) has reported this problem to his readers in these words:

"A school organized (in) a given year—for example, a medical school—may afterwards start courses in pharmacy that develop into a school of pharmacy. The date of organization given in the reports may be that of the medical school and not that of the pharmacy school's beginning. Again, the school may be in existence for years before it appears in official reports. For example, Cleveland organized in 1882, the first class graduated in 1886, yet the school does not appear in the reports of the Bureau of Education till 1899. If the reports of a school are not received, the report of the preceding year is used on the theory that it will not vary greatly from the facts, the third year no report may be received and the supposition is that the school has ceased to exist and it is dropped from the tables. Later it is discovered to be in existence and thriving but the records are not corrected for the missing years."

Because the problems of obtaining data and then of interpreting them have been already considered, a comparison and evaluation of nine lists of schools, colleges and departments of pharmacy which have appeared in the literature between the years 1872 and 1951 may be made. In Table I, except for the years 1872–75, the data from at least three (and as many as five) individual lists may be compared for each of the years considered. For the year 1891 two lists yield identical numerical counts of 38; in no other instance is there numerical agreement between any of the nine early reports. In some instances the difference in number of schools reported in operation during a single year is small, while for other years it is considerable. The significance of this table is not in the numerical disparity of the schools as tallied by date so much as it is a demonstration of disagreement between the compilers concerning which schools were eligible for inclusion and which were not.

A comparison of the single instance involving an identical count by two sources may be made. The authors Taylor and Scoville agree on 36 of the 38 schools included but disagree on two schools. Taylor includes schools at Cornell University and at the University of Denver in his count while Scoville lists instead the Minnesota Institute of Pharmacy and the College of Pharmacy of the Ohio Medical University. The existence of all four schools can be verified from other compilations. The Ohio school does in fact appear on both lists. Scoville reports that Ohio opened in 1891, and it is thus included in the count for that year. Taylor's information differs; he reports an opening date for Ohio as 1892, thus missing the 1891 list.

This example serves to bring sharply into focus the problems encountered by the compilers of these early lists. The disparity of their conclusions becomes understandable. Taylor and Scoville's lists are numerically equal but in fact identify 40 instead of 38 schools. This circumstance suggests that the actual number of schools recorded in the literature should significantly exceed the

TABLE II

AMERICAN PHARMACEUTICAL COLLEGES, SCHOOLS AND DEPARTMENTS, 1821–1900

No.	Name of School	Location	Date Begun	Notes
		ALABAMA		
1	Alabama Polytechnic Institute, School of Pharmacy	Auburn	1895	Also called Alabama Agricultural and Mechanical College, Department of Pharmacy.
2	Birmingham Medical College, Department of Pharmacy	Birmingham	1893	Discontinued.
3	Medical College of Alabama, Department of Pharmacy	Mobile	1882	Affiliated with University of Alabama in 1897.
		CALIFORNIA		
4	California College of Pharmacy	San Francisco	1872	Affiliated with University of California in 1872.
5	California Pharmaceutical Society	San Francisco	—	No other information.
6	College of Physicians and Surgeons, Department of Pharmacy	San Francisco	1898	Discontinued.
		COLORADO		
7	Denver, University of, College of Pharmacy	Denver	1888	Discontinued.
		DISTRICT OF COLUMBIA		
8	Georgetown College, School of Pharmacy		1870	No other information.
9	Howard University, Medical Department, School of Pharmacy		1868	Also 1869; also called Pharmaceutic College.
10	National College of Pharmacy		1872	Affiliated with George Washington University in 1906.
11	Washington Pharmaceutical Society		—	No other information.
		GEORGIA		
12	College of Physicians and Surgeons, Department of Pharmacy	Atlanta	1891	Also called Atlanta College of Pharmacy; continued under private ownership from 1910–1927, when discontinued.
13	Savannah Medical College, School of Pharmacy	Savannah	—	Certificate of proficiency issued.
		ILLINOIS		
14	Chicago College of Pharmacy	Chicago	1859	Affiliated with the University of Illinois in 1896.
15	Illinois Medical College, Department of Pharmacy	Chicago	1900	Also 1901; discontinued in 1905.
16	Illinois University, School of Pharmacy	Champaigne	—	No other information.
17	Northwestern University, School of Pharmacy	Chicago	1886	Affiliated with the University of Illinois College of Pharmacy in 1917.
		INDIANA		
18	Indiana Pharmaceutical Society	Indianapolis	—	No other information.
19	Notre Dame, University of, Department of Pharmacy	Notre Dame	1892	Also 1897, 1898; discontinued.

TABLE II—*Continued*

No.	Name of School	Location	Date Begun	Notes
		INDIANA—*Continued*		
20	Purdue University, School of Pharmacy	Lafayette	1884	
21	Valparaiso University, Department of Pharmacy	Valparaiso	1893	Began as Northern Indiana School of Pharmacy (a department of Valparaiso College) which became Valparaiso University in 1906.
		IOWA		
22	Highland Park College of Pharmacy	Des Moines	1890	
23	Iowa College of Pharmacy	Des Moines	1881	Also 1882; affiliated with Drake University in 1886; discontinued in 1906.
24	Iowa, University of, College of Pharmacy	Iowa City	1885	
25	Iowa Wesleyan University, Department of Pharmacy	Mt. Pleasant	—	No other information.
26	Keokuk College of Pharmacy	Keokuk	1900	Also called Keokuk Medical College, Department of Pharmacy; discontinued.
		KANSAS		
27	Kansas College of Pharmacy	Leavenworth	—	No other information.
28	Kansas Medical College, Department of Pharmacy	Topeka	—	
29	Kansas, University of, Department of Pharmacy	Lawrence	1885	School of Pharmacy organized in 1891.
		KENTUCKY		
30	Louisville College of Pharmacy	Louisville	1870	Incorporated in 1873.
31	Louisville College of Pharmacy for Women	Louisville	1883	Discontinued in 1892.
		LOUISIANA		
32	New Orleans College of Pharmacy	New Orleans	1900	Also 1902; affiliated with Loyola University in 1919.
33	Tulane University, School of Pharmacy	New Orleans	1838	Originally a part of the medical department.
		MAINE		
34	Maine, University of, College of Pharmacy	Orono	1894	Discontinued.
		MARYLAND		
35	Maryland College of Pharmacy	Baltimore	1840	Also 1841; affiliated with the University of Maryland in 1904.
		MASSACHUSETTS		
36	Massachusetts College of Pharmacy	Boston	1823	Regular classes started in 1867.
		MICHIGAN		
37	Detroit College of Medicine, Department of Pharmacy	Detroit	1889	Also 1890; parent organization was Detroit Institute of Technology; discontinued in 1905.

TABLE II—*Continued*

No.	Name of School	Location	Date Begun	Notes
		MICHIGAN—*Continued*		
38	East Saginaw Valley Pharmaceutical Association	East Saginaw	—	No other information.
39	Ferris Institute, Department of Pharmacy	Big Rapids	1884	Also 1893.
40	Michigan, University of, School of Pharmacy	Ann Arbor	1867	Also 1868.
		MINNESOTA		
41	Minnesota Institute of Pharmacy	Minneapolis	1886	Discontinued.
42	Minnesota, University of, College of Pharmacy	Minneapolis	1892	
		MISSOURI		
43	Kansas City, University of, Department of Pharmacy	Kansas City	1885	Also called Kansas City College of Pharmacy in 1889; called Kansas City College of Pharmacy and Natural Science in 1898.
44	Saint Louis College of Pharmacy	St. Louis	1864	Also 1865, 1866; charter in 1867.
		NEBRASKA		
45	Fremont Normal School, Department of Pharmacy	Fremont	1900	Also 1901; became Omaha College of Pharmacy (Omaha) in 1901; became Creighton University, School of Pharmacy in 1905.
		NEW JERSEY		
46	New Jersey College of Pharmacy	Newark	1892	Became Rutgers College of Pharmacy.
47	Newark Pharmaceutical Association	Newark	—	No other information.
		NEW YORK		
48	Albany College of Pharmacy	Albany	1881	
49	Brooklyn College of Pharmacy	Brooklyn	1891	
50	Buffalo College of Pharmacy	Buffalo	1886	
51	Cornell University, School of Pharmacy	Ithaca	1887	Discontinued in 1890.
52	New York, City of, College of Pharmacy	New York	1829	Became Columbia University in 1904.
		NORTH CAROLINA		
53	North Carolina, University of, School of Pharmacy	Chapel Hill	1896	Also 1897.
54	Shaw University, Leonard School of Medicine and Pharmacy	Raleigh	1890	
		OHIO		
55	Baldwin University (no other designation)	Berea	1865	Discontinued.
56	Cincinnati College of Pharmacy	Cincinnati	1850	Also 1871 (when classes began).
57	Cleveland Pharmaceutical Association	Cleveland	1882	Chartered to confer degrees in 1895; name changed to Cleveland School of Pharmacy.
57a	Cleveland School of Pharmacy	Cleveland	1895	
58	Ohio Medical University, College of Pharmacy	Columbus	1891	Discontinued.

TABLE II—*Continued*

No.	Name of School	Location	Date Begun	Notes
		OHIO—*Continued*		
59	Ohio National Normal University, Department of Pharmacy	Lebanon	—	
60	Ohio Normal University, Department of Pharmacy	Ada	1884	Also called Ohio Northern University.
61	Ohio, University of, Department of Pharmacy	Columbus	1885	
62	Scio College, Department of Pharmacy	Scio	1887	Also 1888; discontinued in 1908.
63	Starling-Ohio Medical College, Department of Pharmacy	Columbus	1892	
		OKLAHOMA		
64	Oklahoma, University of, School of Pharmacy	Norman	1893	Also 1895.
		OREGON		
65	Oregon Agricultural College, Department of Pharmacy	Corvallis	1898	Also 1899; also called Oregon State College.
66	Oregon College of Pharmacy	Portland	1889	
		PENNSYLVANIA		
67	Medical-Chirurgical College of Philadelphia	Philadelphia	1898	Affiliated with Philadelphia College of Pharmacy in 1916.
68	Philadelphia College of Pharmacy	Philadelphia	1824	
69	Pittsburgh College of Pharmacy	Pittsburgh	1878	Affiliated with the University of Pittsburgh in 1896.
		RHODE ISLAND		
70	Rhode Island Pharmaceutical Society	Providence	—	No other information.
		SOUTH CAROLINA		
71	Medical College of the State of South Carolina, Department of Pharmacy	Charleston	1894	Also 1895.
		SOUTH DAKOTA		
72	Dakota Normal College, Department of Pharmacy	Sioux Falls		
73	South Dakota State College, Department of Pharmacy	Brookings	1888	
		TENNESSEE		
74	Central Tennessee College, Department of Pharmacy	Nashville	—	
75	Grant University, Department of Pharmacy	Chattanooga		Also called U.S. Grant University.
76	Sewanee Medical College, College of Pharmacy	Sewanee	1898	Also called University of the South; discontinued in 1909.
77	Tennessee College of Pharmacy	Nashville	1873	Discontinued.
78	Tennessee, University of, School of Pharmacy	Knoxville	1898	Also 1901; moved to Memphis in 1911.
79	Vanderbilt University, Department of Pharmacy	Nashville	1879	Discontinued.
80	Walden University, Meharry Pharmaceutical College	Nashville	1888	Also 1889.

TABLE II—*Continued*

No.	Name of School	Location	Date Begun	Notes
		TEXAS		
81	Baylor University, College of Medicine and Pharmacy	Dallas	1900	Also 1901.
82	Dallas Medical College, Department of Pharmacy	Dallas	1900	Also 1901.
83	Gate City School of Pharmacy	Texarkana	1900	Discontinued in 1905.
84	Southwestern School of Pharmacy	Dallas	1897	
85	Texas, University of, School of Pharmacy	Galveston	1893	Also Austin, Texas.
		VIRGINIA		
86	Medical College of Virginia, Virginia School of Pharmacy	Richmond	1893	Also 1897.
87	University College of Medicine, Department of Pharmacy	Richmond	1893	Also called Union College of Medicine; affiliated with the Medical College of Virginia in 1913.
		WASHINGTON		
88	Washington Agricultural College, School of Pharmacy	Pullman	1896	Discontinued.
89	Washington, State College of, Department of Pharmacy	Pullman	1892	Also 1896.
90	Washington, University of, College of Pharmacy	Seattle	1894	Also 1895.
		WISCONSIN		
91	Milwaukee Medical College, Department of Pharmacy	Milwaukee	1899	Also 1900; also called Marquette University, Department of Pharmacy.
92	Wisconsin, University of, School of Pharmacy	Madison	1883	

number reported by any single source, and this is bourne out and documented in this paper. Taylor's list of 65 schools, colleges and departments of pharmacy which had been operative at some time up to and including 1900 stands as the largest reported in this survey. By examining each list and by utilizing other early sources, a total of 92 individual institutions has been identified. These 92 schools comprise Table II.

Certain arbitrary aspects of this table require clarification. The column which has been designated "Date Begun" is deliberately ambiguous to satisfy the variety of terms used in the early lists to report opening dates. Several examples would be "when instituted," "when organized," "when founded" and "when continuous instruction was established." If more than one date is reported for an institution, the earliest date has been recorded in the "Date Begun" column and later dates placed in the notes. If a school appears in the literature by more than one name during this period, these variations are furnished in the notes. Finally, the phrase "no other information" is appropriate only for the schools indicated and is not applicable to institutions for which no notes appear.

The list of 92 schools has been compiled on conservative principles and is not necessarily complete. Institutions cited without opening dates solely in reports published after 1900 have been omitted. Excluded are several published reports of intent to establish schools of pharmacy during this period

when actual confirmation of the opening is unavailable. In several cases schools were excluded simply because no information beyond their names could be located.

The establishment or sponsorship of schools of pharmacy during the 1870's, 1880's and 1890's resulted in a plethora of substandard institutions. The jealousy and enmity which they engendered was a great deterrent to progress in pharmaceutical education. With many schools funded solely on the income from students' fees, the qualifications for entrance and for graduation were lax, and the graduate of one school had a training very different from that of a graduate from another school. Underpaid instructors furnished neither prestige nor quality education, and many schools were shortlived. Institutions of this type were often unwilling to divulge information to investigators bent upon presenting accurate accounts of the state of pharmaceutical education.

Ultimately the goal of requiring all teaching institutions to supply uniform, high quality education was accepted. Soon left behind was the "diploma mill" where one labored in a desultory manner to pass a board of pharmacy examination with the least possible effort and trouble.

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Chemistry at Extinct Medical Schools of Nineteenth-Century Philadelphia

By HAROLD J. ABRAHAMS, PH.D.*

ALTHOUGH difficult to believe, it is nonetheless true that the city of Philadelphia, around the year 1850, boasted eight medical schools out of a national total of thirty-seven, or twenty-two percent of the potential for medical education in the entire United States. Upward of two thousand students were said to have been enrolled in these schools at one time. Four of these schools still flourish, the remainder having become extinct by 1880. The now-extinct schools did not all arise in the same year, nor become extinct simultaneously, so that the actual count is a total of six schools, whose names and dates were as follows:

Medical Department of Pennsylvania College	1839–61
Philadelphia College of Medicine	1847–59
Franklin Medical College	1846–52
Penn Medical University	1853–80
Eclectic Medical College of Pennsylvania and a branch institution known as The American University of Philadelphia	1850–80
Eclectic Medical College of Philadelphia, later known as The Philadelphia University of Medicine and Surgery	1860–80

Every one of these schools, from its very beginning, had a professor of chemistry, and as a general rule, he was the possessor of the degree of doctor of medicine, and a person of some distinction. For example, Franklin Medical College had James B. Rogers, member of a family of famous scientists, who later left to succeed Robert Hare at the University of Pennsylvania. He was succeeded by Robert Bridges, who was editor of an American version of the very widely-used Fownes' *Manual of Elementary Chemistry,* and Graham's *Elementary Chemistry,* assisted George B. Wood in the preparation of several editions of the United States Dispensatory, was a member of the Revision Committee of the *United States Pharmacopoeia,* a member of the American Philosophical Society, etc. Thomas F. Betton, at the same school, was the translator of M. V. Regnault's *Elements of Chemistry,* despite the fact that he did not teach the subject there. Likewise, Paul Beck Goddard, professor of anatomy in this school, who was assistant to Hare at the University of Pennsylvania at one time, was the discoverer of the action of bromine vapor in accelerating Daguerre's process, a discovery which proved to be fundamental to later progress in the art of photography. (By error this discovery was credited to a London optician by the name of John F. Goddard, who announced the same discovery one year after Paul Beck Goddard demonstrated his process before the American Philosophical Society, which shortly thereafter elected him to membership.) The Medical Department of Pennsylvania College had Walter R. Johnson, lecturer at the Franklin Institute and a contributor to the literature of both pure and applied science. The Philadelphia College of Medicine had B. Howard Rand, who later succeeded the famous Franklin Bache at Jefferson Medical College and wrote a textbook on medical chemistry. Earlier the Philadelphia College of Medicine had Alfred L. Kennedy, who had travelled abroad, studying chemical education in Great Britain and on the Continent, and returned to become a great national pioneer in education for engineering,

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chemistry, architecture and related fields. At the Penn Medical University during its existence of nearly a score of years, the chair of chemistry changed hands six or seven times. The Eclectic Medical College of Pennsylvania, during its life-span of nearly thirty years, had eight or nine occupants of the chair, the last person holding the degree of PH.D., in addition to that of M.D. (1878). The Eclectic Medical College of Philadelphia had but one incumbent in chemistry during its entire existence, Charles S. Gauntt, who, as was the case with so many of the other professors at the other schools, was a graduate of the School of Medicine of the University of Pennsylvania, where chemical education had been strong for a long time. After graduating, Dr. Gauntt made a trip to England, where, among other things, he attended the lectures of Michael Faraday. Upon his return he became assistant to James B. Rogers at the Franklin Medical College and the Franklin Institute. Testimonials on his behalf were written by Franklin Bache and Bridges. This college also had an emeritus professor of chemistry, to whom we shall refer later.

Each of these schools claimed to be well equipped to teach chemistry, being in possession of very extensive and adequate apparatus for demonstrations in general and organic chemistry, and having many specimens of pure and adulterated compounds, a supply of furnaces, pneumatic troughs, diagrams, etc. The Medical Department of Pennsylvania College claimed a chemical laboratory in its first building. Its new home, completed in 1853, was especially designed for it by an architect who had made a visit to Europe in order to study medical school structures there and was said to be "the most complete and elegant structure of its kind in America." It had a chemical lecture room and a well-supplied laboratory for teaching medical chemistry, "particularly as it applies to physiology and pathology." These same facilities were later used by the Philadelphia University of Medicine and Surgery (earlier known as the Eclectic Medical College of Philadelphia) when it purchased the structure in 1863. In view of the fact that some writers on the subject of medical education in America were saying, around the year 1852, that in our country the requirements for graduation, compared with those of European schools, were more deficient in chemistry than in any other factor except hospital attendance, it is interesting to note not only the presence of four hours of instruction per week for eighteen weeks, in chemistry, in the curricula of these schools, but also the existence of a chemical laboratory in at least some of these schools. It is even more interesting, in view of the fact that the Alfred L. Kennedy, earlier referred to, had thought medical education in our country so deficient in this science, (which, in his words, could "render more exact and rational our notions of respiration, digestion, assimilation and other phenomena of life," and reveal the nature of abnormally retained or excreted solids and fluids, as well as rendering pharmacy and toxicology understandable) that he founded a school for teaching three specialties in chemistry. One of these for medical students offered a laboratory course[1] having a duration of sixty hours. Kennedy remarked that for aught he knew, at no other school in the country was laboratory work in medical chemistry being done in a group (as he put it, "simultaneously") before it was so done in his school in 1849 (1). By 1870, there were four schools in the city where a medical student could obtain a "thorough" training in medical chemistry. Harvard is said to have adopted the lec-

[1] "The earliest student laboratory in America seems to have been that opened by William James Macneven ... between 1810 and 1820. The second was initiated by ... Keating at the University of Pennsylvania in 1822." See Wyndham D. Miles: William H. Keating and the Beginning of Chemical Laboratory Instruction in America. *Library Chronicle, University of Pennsylvania,* Volume XIX, No. 1, 1952–53.

ture-demonstration method in 1851, about ninety years after its first use at William and Mary. At the schools which we are presently discussing, the methods of teaching chemistry were therefore relatively up-to-date, since both lecture and laboratory instruction were being given. Part of the lecture time was devoted to a review of the previous lecture, and there was a weekly quiz. Most of the schools demanded a thesis as part of the requirements for graduation, and some of these theses were on chemistry as it relates to medicine. The writers of such theses gave themselves, in effect, additional training in chemistry by their reading, observation and perhaps some hours of chemical investigation in a laboratory.

The philosophy of chemical education differed somewhat at the various schools. At the Medical Department of Pennsylvania College (2) a general and systematic view of chemistry was given, but it was frankly stated that all purely chemical matter not bearing directly upon medicine was omitted. Then followed the chemistry related to physiology and pathology, i.e., to health and disease. Microscopic investigation, where it strengthened instruction in medical chemistry, was given its place. Thus, pared to the most advantageous limits by the professor, the course allowed time for instruction in toxicology, which included a discussion of the physiological action of poisons, symptoms of poisoning, tests, treatment and medico-legal training relating to toxicology. There were demonstrations by the professor, diagrams, and blackboard illustrations.

At the Philadelphia College of Medicine (3) the same outlook prevailed, special mention being made by the announcements of the school that the course included chemical studies of urine, blood and the digestive process, and the professor stated that he was ready to accept private pupils for laboratory instruction as soon as he could complete the necessary arrangements. When Dr. Rand was appointed to the chair, he made the course exclusively medical chemistry, i.e., chemistry as it relates to materia medica, pharmacy, physiology, pathology, diagnosis and toxicology, fully illustrated "in the laboratory." The College advocated a lengthening of the training of a physician to include four terms of instruction, in three of which chemistry would be given. The College also gave a summer course, in which general and organic chemistry were taught.

At the Franklin Medical College, however, the course was systematic, covering each element and its important compounds, followed by the organic chemistry of the principal animal and vegetable compounds of importance to the practice of medicine (4).

The Penn Medical University (5) early advocated a graded curriculum, consisting of four terms, in the first of which, the so-called philosophical term, a systematic treatment of chemistry was given; in the second, or physiological term, emphasis was on organic and physiological chemistry; chemistry not given in the third term; and, in the last, or practical term, all the principles learned in the previous courses were applied to toxicology, pathology, materia medica, pharmacy, etc. To quote (1855): "In this department the students will be required to perform experiments, apply tests, make analyses, etc., and thus, become not only accustomed to manipulating, but also practically familiar with this beautiful and most important science."

At the Eclectic Medical College of Pennsylvania (6) an early professor gave a systematic course, including the nature of chemical affinity, which would probably be charming to us, of the twentieth century, to hear him expound; then he followed this treatment by lectures on organic and clinical chemistry and toxicology. In 1860 the journal published by this school frankly admitted that medical students in general regarded chemistry as a bugbear and therefore altogether neglected it, for lack of the

patience required to master its "technicalities." The editor therefore called for a sloughing off of details, and the use of demonstrations and laboratory work to teach the principles, heighten student interest and teach the many applications of chemistry to pathology, physiology, hygiene and materia medica. In 1863 a professor of organic chemistry made his appearance. By 1872 individual laboratory instruction in qualitative and quantitative analysis, toxicology, clinical chemistry, organic analysis and instruction in original research were claimed by this school, all of these being available on a daily basis.

The Philadelphia University of Medicine and Surgery (7) claimed that chemistry was offered there for four terms, two of which gave the subject the usual treatment. In the other two terms analytical and organic chemistry were given.

A coverage of chemical topics for a medical student of those days would have included the following:

1. Definition of element, compound, acid, base, salt, alkaloid, etc.
2. A very simple treatment of chemical nomenclature, notation, reactions and chemical equations.
3. Some of the more important properties and tests for oxygen, hydrogen, nitrogen, sulphur, selenium, phosphorus, the halogens, carbon, boron, silicon and their acids. Some of these elements were merely "mentioned in passing." This must also have been true of a good deal of the following:
4. The alkali and alkali earth metals and their common salts.
5. Aluminum, iron and its compounds (more intensively), the noble metals, the metalloids.
6. Mercury and compounds, upon which great stress was laid.
7. Chromium, manganese, lead, zinc, tin, copper, the last four probably receiving a little emphasis.

Organic Chemistry:

1. Acids: acetic (and the acetates of lead and of potassium), tartaric (and the double tartrates of sodium-potassium, and of iron-potassium), formic, lactic, tannic, benzoic, citric (and citrates of potassium, and of magnesium), uric, picric.
2. Alkaloids: morphine, quinine, quinidine, cinchonine, strychnine, veratrine, atropine, emetine, caffeine, theine.
3. Alcohols: the first five homologues.
4. Ethers: the first five homologues.
5. Fats: glycerin, stearin, olein, margarin, soaps.
6. Resins.
7. Animal chemistry: gelatin, albumin, fibrin, casein, peptone, chondrin (present in rib-cartilage)
8. Bone and bone-black.
9. Blood, the composition of which was given as:

Fibrin	3
Albumin	72
Salts, fats and extracts	8
Red corpuscles	127
Water	790
Total	1000

10. Urine.
11. Urinary calculi.

The textbooks on chemistry used at these schools varied in degree of difficulty, but many of them were advanced treatises. Lehman's text was a three-volume work in German, and Fownes, Regnault, Turner, Graham, Taylor, Silliman, Rand and others were also solid works. Toxicology texts by Christison and by Taylor were in use.

By 1865 a special course in "urino-pathology" was available at the Philadelphia University of Medicine and Surgery. It consisted of twenty-four lectures, illustrated by specimens of urine associated with various diseases, and demonstrations of chemical tests on these specimens. There were color

charts with explanations, diagrams, and a set of actual specimens of urinary deposits, urea, uric acid, ammonium urate, hippuric acid, the various phosphates, calcium oxalate, cystine, albumen, diabetic sugar, incipient calculi, to name several—about sixty urinary ingredients to be viewed under the microscope by the student. The training in the use of the microscope and the methods of performing the chemical tests enabled the student to diagnose over fifty different diseases and taught him to view the state of the urine as a reflection of the state of the constituents of the blood with the same degree of certainty as that in surgery (8).

A few of the beliefs of a chemical character held at the Eclectic Colleges of Pennsylvania and of Philadelphia, respectively, may be of interest. At the former, Dean John Buchanan[2] conceived the idea of exploiting ozone as a medicinal agent. He used the magazine of the college to advertise the sale of ozone generators "to act as a plow or harrow in upturning these vegetable parasites", i.e., the malarial protozoan, etc., by treating an endless number of diseases with ozone. There were:

1. Clay, ozonized at from twelve to eighteen atmospheres, to be applied as an ointment, spread upon leather, for tumors (twelve atmospheres) and cancers (eighteen atmospheres).
2. Glycerate of ozone (ozone dissolved in glycerin), Nature's remedy for all blood, skin and nervous diseases, preeminently constructive to the brain, and an aid in promoting recovery in most hopeless cases.
3. Ozone water (an aqueous solution of ozone). It sharpens the nerves of nutrition, directly promotes brain growth, etc. in doses of a half teaspoonful three times a day, and may be used in baths, in three different available strengths, according to the skin disease for which intended.
4. Pure ozone baths for skin diseases, rheumatism, etc., in conjunction with internal ozone preparations. (There was a special contraption which was attached to an ozone generator and sold for ten dollars).
5. Ozone ointment for burns.
6. Ozone vaporizer releases a fluid so highly impregnated with ozone that it will produce a vapor upon removal of the stopper, useful for all form of headache—it so thoroughly vitalizes the brain that no opium, chloral, etc. are needed to overcome sleeplessness —it is Nature's anodyne to an exhausted brain.
7. Ozone syrup for typhoid fever.
8. Ozone catarrh fluid for catarrh, other respiratory diseases, eustachian deafness, chronic laryngitis, asthma, pulmonary consumption, etc. Used according to directions, a cure can be guaranteed every time.

The apparatus and method of generating the ozone were said to be patented in the United States and Great Britain, and a microscope was supposed to be indispensable for satisfactory results in this "new field of scientific discovery." Buchanan sent John J. Siggins, M.D., PH.D. (whom the *Philadelphia Record* described as a comparatively young man, "not over brilliant") to England, there to organize a hospital and to "instruct all physicians in the new cure by chemically pure ozone." Buchanan also lightly said, in passing, that Dr. Siggins was "as scientific as Darwin, more ripe in erudition than Huxley, superior to Tyndall and Beale in the profundity of the germ theory of disease."

The philosophy of ozone therapy was that it was the base of all chemical agents and the essence of all animal existence. Without injuring the system, it destroyed all poisons of the body, vivified the nervous

[2] He was later hunted down in Canada, enticed across the border and arrested in Michigan, then returned to Philadelphia for trial in connection with his selling of bogus medical diplomas.

system, and maintained life. In fevers all the ozone of the blood is used up. The administration, at that time, of ozone would result in increased respiration and diminished fever and inflammation. The corpuscles, becoming ozonized, were cleansed of tubercle germs, syphilis, mercury, erysipelas, small pox, diphtheria, glanders, hydrophobia, etc., and the patient was thus restored to health. The blood would render men free of the poisons of cancer, etc., if it but contained sufficient ozone, but since the amount of ozone in the air is not constant, because it is forever being consumed in destroying the fungi around us, it must be constantly replaced in the atmosphere of cities, theatres and houses. Where there is no ozone, death must soon take place. The more ozone in the air the better. When a piece of guaicum test-paper is dipped into the blood of freshly slaughtered animals, we see that healthy blood contains much ozone, but the blood of diseased animals, confined to cities, is poor in ozone. Ozone is the only remedy which can cure a disease of the blood (9).

Next to ozone, sulphur was the great antiseptic of Nature, as seen in its action in destroying all parasitic life, in diphtheria (as a gargle mixed with water), in the treatment of scarlet fever, etc. Among the many new remedies it was doubtful if there were any like sulfur. It was given with rosin to treat gonorrhea, with holland gin for uterine trouble, with brandy for liver trouble, etc.

In closing, this account of chemistry at the extinct schools must refer to some organo-metallic compounds and to electrolysis. Professor J. Milton Sanders, M.D., L.L.D., professor emeritus at the Philadelphia University of Medicine and Surgery, wrote, in 1865, in contradiction of the allopathic doctors who prescribed many mercury preparations quite freely and denied that this element could combine with organic matter, either living or dead. Dr. Sanders had once proved that mercury could indeed so behave and even predicted that other organo-metallic compounds, beside those of mercury, would be discovered. Events finally substantiated his claim, for it became known that not only mercury but also arsenic, antimony, zinc, bismuth, lead, tin (and the halogens as well) were found capable of entering into organic molecules, as should have been anticipated. It had long been known that some very important tissues contain compounds of calcium, iron, sodium, (as well as the nonmetals phosphorus and sulfur). These elements, Sanders pointed out, must be chemically combined with the organic matter of the body, the resulting compounds being very stable, else they could not exist in the body. Further, no metal had so strong a tendency to unite with organic matter as did mercury.

Sanders discussed the structural formulae, preparation and properties of several organo-mercurials and arsenicals, such as cacodylic acid. He found that organo-sodium and potassium compounds show greater chemical energy than those of zinc, which are in turn more active than those of arsenic, antimony, tin and lead. The energetic nature of the hydrocarbon radical declines as the number of carbon atoms rises in organo-metallic compounds. The more complex the compound, therefore, the more easily it will be amenable to decomposition by electrolysis, because the greater the number of atoms in a compound, the slighter the bonds which hold it together, and in proof of this, a binary compound of an element is generally the most stable. From the ease with which organo-mercurials decompose by electrolysis, we can be certain that mercury forms complex compounds in the body. It is true, as Faraday says, that only binary compounds are subject to electrolysis, but the complex compounds also yield by first decomposing into similar substances.

Mercury, when taken into the body, behaves as a foreign substance, which the human system tries to expel. (Iron, and the other metals, normal to the body, are not

expelled, because Nature regards them as desirable constituents). The Eclectic doctors said for a long time that the use, in medicine, of mercury, arsenic and many heavy metals should be abandoned. The allopaths said that mercury could not unite with body-tisses and therefore could not be retained there. Sanders held that it was, indeed, retained, and would remain there for life (unless removed by electrolysis), causing inflammatory rheumatism and other conditions, which "old school doctors" considered to be individual diseases, but were nothing more than Nature's effort to expel the retained mercury.

To prove his point he set up an electric battery of six Grove cells in series. Into a basin of either wood or porcelain, but not of metal, he poured a solution of table-salt, then had his patient place his feet into the liquid. He then slipped a sheet of polished copper under the feet. The negative pole of the battery was attached to the sheet of copper, and the wire from the positive pole either held by the patient or, better yet, placed against his back, at the neck. The process was allowed to run for fifteen minutes and repeated. Dr. Sanders found that the first treatment sometimes resulted in no benefit to a patient, but the second sitting produced sufficient mercury, in the form of a deposit upon the copper plate, to form either a globule or a series of nebulous spots, which, as mercury should do, disappeared upon heating, due to vaporization. By this process he removed great quantities of mercury from the bodies of persons who had taken no mercury compounds for twelve or more years, and one of his students claimed to have done so from a person who had not had any for forty years. As is well known, silver forms compounds in the body, which, when they reach the skin, turn it blue because of the action of light upon silver salts. By similar reasoning and the use of electrolysis, said Dr. Sanders, he was able to remove silver from the skin of a patient of a medical school professor. While the professor was away, enjoying a vacation, his patient, who was taking silver nitrate, turned as blue as indigo. By electrolysis, using a powerful current, Dr. Sanders almost restored the person to his natural color, and felt that, had the patient continued the treatment, all the blue would have been removed.

Dr. Sanders said that his method was denounced as "humbug" but later the learned savants of France stated that metals could, indeed, be removed from the body by electrolysis and spoke of the process as though it were a French discovery. One Frenchman went so far as to give the date when he made the discovery—1851. Dr. Sanders had already published his findings in 1844.

Events in the histories of the extinct medical schools of nineteenth-century Philadelphia show that the study of chemistry had early become a key subject in the education of physicians there.

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Memoir of Douglas P. Murphy 1893–1971*

By HARRY FIELDS, M.D.

DR. Douglas P. Murphy, Professor Emeritus of Obstetrics at the University of Pennsylvania, died December 12, 1971 at Lankenau Hospital. He was 78 years of age and lived at 601 South Bowman Avenue, Merion, Pennsylvania. He was born March 3, 1893, in West Philadelphia. Douglas was the fourth Murphy in a direct line in Philadelphia from Daniel Murphy, the dry goods merchant who came here in 1790. His father died when he was five years of age. He had a sister, Miss Edith Murphy who was Associate Head of the Agnes Irwin School, and an older brother Walter Bispham Murphy, who was connected with the Wharton School of the University of Pennsylvania, and a younger brother who died. Dr. Murphy's mother declined his admission to Girard College, but obtained a scholarship at the Delancey School from which he was graduated in 1910. He received his medical degree from the University of Pennsylvania in 1916. He interned at Presbyterian Hospital and then served with the United States Army Surgical Unit in France in World War I. He was one of the first medical men to work with radium, doing research in Rutherfordton Hospital in Rutherfordton, North Carolina, after a stay at Philadelphia General Hospital. He remained at North Carolina for five years and then returned to New York where he worked at Women's Hospital and the Lying-In Hospital for 18 months. He then came to Philadelphia to begin the practice of obstetrics and gynecology and to do research.

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He was associated with the School of Medicine of the University of Pennsylvania for 35 years, where he did research in obstetrics and gynecology, cancer and related fields, and conducted a private practice in obstetrics and gynecology. He was the first president of the Pennsylvania Medical Alumni Society and served as such for 25 years. Dr. Murphy was also former Clinical Director of the Farris Institute for Parenthood here at 133 South 36th Street. He became emeritus professor of obstetrics and gynecology in 1958 and retired about eight years ago.

Dr. Douglas P. Murphy was the author of more than 100 articles and four books on obstetrics and gynecology. He was listed in *Who's Who in the East*. He was a member of numerous medical organizations. He was one of the earliest supporters of family planning.

Dr. Murphy was a large, genial, friendly individual who was admired and loved by everyone who knew him. In his background is exhibited the versatility of interests that eventually molded his character. While at Delancey School he played the violin and at college he was on the track team for two years. He also threw the hammer, and while in the Army he won a championship on Field Day during the Armistice. Although he had no real hobbies as such, he spent a considerable amount of his free time gardening. He was so preoccupied with his work and many medical interests that he had very little time left for extracurricular activities. He frequently smoked a pipe and was rarely without it at his desk.

He was as excellent a teacher as he was a

person and an investigator. His basic philosophy in medicine will always be remembered by those who were associated with him as student or colleague—"Always do the best you can for the most." He always had considerable optimism and a wonderful sense of humor. He was a man of keen intellect and inspiring enthusiasm. Above all, he was kind and compassionate. All those who knew him will remember him as a large, congenial physician who was completely dedicated to the teaching, research and private practice of gynecology and obstetrics.

In addition to his wife, the former Grace L. Austin, also a doctor, he is survived by a son, Austin D., of Merion; a daughter, Mrs. Eileen C. Murray of Sunbury, Massachusetts; a sister, Edith, of Philadelphia, and two grandchildren.

Memoir of J. Howard Pew 1882–1971*

By T. GRIER MILLER, M.D.

ON November 27, 1971, our College lost an outstanding Honorary Associate Fellow. He was not only a substantial benefactor, incognito, of our organization, as of many others, but a great American citizen.

J. Howard Pew was born in Bradford, Pennsylvania, on January 27, 1882. He was graduated from Grove City College at the age of eighteen and subsequently from the Massachusetts Institute of Technology. His father was Joseph Newton Pew, Sr., who in 1886 had founded what later became the Sun Oil Company. He had conceived the idea of developing an oil refinery along the course of the Delaware River at Marcus Hook, but this presented various difficulties. Finally in 1901 he submitted the problem to his son, and Howard promptly gave all his time, day and night, to acquiring the fundamental techniques. This soon led him, with the help of others, to the conversion of the new naphthenic Texas crude oil into a fine-bodied viscous lubricant and that to the earnings necessary for the success of the Marcus Hook Refinery. At the death of his father in 1912, Mr. Pew became president of the company, a position he retained for thirty-five years. Later he served as chairman of the Board from 1963 to 1970 and chairman of the Executive Committee from 1970 to his death. As Sun's president, he made significant contributions to his country's defense during both World Wars. I shall not go further into detail regarding his many industrial and other accomplishments except to mention some of the awards bestowed upon him.

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia, to be read before the College on 4 October 1972.

As a founder and Director of the American Petroleum Institute, Mr. Pew received its Gold Medal for Distinguished Services and also became, for life, an Honorary Vice President of the National Association of Manufacturers. He received the Franklin Institute's Vermilye Medal for Notable Leadership in Industrial Management and the William Penn Award of the Philadelphia Chamber of Commerce. In addition, he received from appreciative employees of his own Sun Oil Company, at the time of his retirement as its president in 1947, many significant gifts, and from the Board of Directors on his sixty-fifth service anniversary what he prized most of all, a 360-year-old Bible. Perhaps even more he was thrilled by a testimonial presented by the employees with whom he had worked in his earlier years. His last award, presented in 1971, was that of the Magna Charta of the Baronial Order of Magna Charta.

In 1907 Mr. Pew married the former Helen Jennings Thompson of Pittsburgh. She was a charming person and an inspiring and devoted helpmate to him throughout their married life. She died in 1963. To indicate his affection for her, and incidentally his own ingenuity, let me report the following. In 1957 she developed an allergic disturbance with purpuric spots. She was told to give up all drugs, but her situation deteriorated steadily and various hematologists from about the country were brought in as consultants. The situation became more serious. Meantime Mr. Pew himself had spent much time with her and, without our knowledge, had been making his own observations and studies. Finally he stated to me that he had found the trouble: suppositories in which his chemists had found

a benzol ring. These, of course, were eliminated and she readily recovered.

Like his father, who had been deeply interested in Grove City College and who had become its first Board chairman in 1895, both Mr. J. Howard and his brother, Joseph N. Pew, Jr., became trustees. Mr. Pew continued in that position until his death, attended all Board meetings and made significant administrative and financial contributions. Also, he was a trustee of the Jefferson Medical College and Hospital for many years and chairman of the Board of the Institute for Cancer Research in Philadelphia. Locally he was a member of the Union League, the Philadelphia Club, the Philadelphia Country Club, the Racquet Club and the Merion Cricket Club.

Being normally quite healthy and vigorous, Mr. Pew always took good care of himself physically. In his younger days he was an expert cyclist and took much interest in baseball. Later he became an excellent golfer, eventually breaking his age four times on the golf course. In the early mornings he frequently walked the mile around his forty-acre home place in Ardmore, always walking rapidly and at long strides, but seeing to it that his pulse never exceeded 68. Bridge was another hobby. He did not drink alcohol, but did smoke Cuban cigars. Once, while on a six-week European tour, with me as one of his guests, he took along the proper number of cigars and was smoking the last one as we reentered New York Harbor.

Mr. Pew was a student of history and deeply interested in both political and religious affairs. He never sought political office, but kept in close touch with political developments, and his advice was often sought by outstanding leaders, including many presidents of the United States. His advice was always of a conservative nature. He opposed government interference with industry and felt that the care of the needy was the responsibility of the church and other charitable organizations. He was a ruling elder of the Ardmore Presbyterian Church and for many years was president of the Board of Trustees of the General Assembly of the Presbyterian Church. He held the latter position in spite of substantial differences of opinion with some on the role of the church in social and economic issues. He constantly fought for the freedom of the individual, irrespective of his political or religious beliefs.

He made many public addresses, always having carefully prepared and memorized them, and these often included many verses of poetry. Though he carried his notes with him he never used them.

As many have said of Mr. Pew, though he was a modest, kindly, compassionate, highly intellectual and generous man and of outstanding integrity, he was highly dynamic, ready at all times to fight for his convictions. His contributions to the welfare of man will be enduring and of lasting value and influence. He will never be forgotten by his many friends.

Memoir of Truman Gross Schnabel, Sr. 1886–1971*

By T. GRIER MILLER, M.D.

TRUMAN Schnabel and I were close friends for sixty-four years. Until after his death on August 27, 1971, when I was able to review his records and publications, I did not fully appreciate the extent and significance of his accomplishments. I did know, however, that he was a quiet, humble, gracious, intelligent and humanistic person, deeply devoted to his chosen profession and equally interested in people generally. These attributes had become clear to me during our four years as medical classmates at the University of Pennsylvania (1907–11), our two years as interns at the University's Hospital (1911–13) and especially during the following year as roommates in the home of Dr. Frederick H. Klaer.

Truman Gross Schnabel, Sr., a great-grandson of two soldiers in the American Revolutionary War, was born on February 7, 1886, in a small farmhouse in Georgetown, Pennsylvania, where his parents were then living with his maternal grandmother, a close relative of Dr. Samuel Gross. This was only a few miles from Bethlehem, where his father, Edwin Daniel Schnabel, a scholarship awardee and a graduate, in 1885, of our medical school was beginning practice. Truman recorded that, by stagecoach and later by bicycle, he made frequent visits to that farm. Then he attended a Bethlehem public school where, at 16 years of age, he was graduated along with nine other boys and six girls. Following that he spent one year in the Bethlehem Preparatory School, where he did well scholastically, engaged in athletics, track and tennis, and sang in a Moravian church on Sundays. Meantime he won a scholarship at Lehigh University, where he obtained an A.B. degree in 1907. He thought he did not perform up to his capacities at Lehigh, but anyway he took part in minstrel shows as well as athletics and, in his fourth year, became the secretary of his class. In addition, he was a member of the Science and Art Club. At the University of Pennsylvania School of Medicine he received a scholarship and readily regained his scholastic habits, being elected to A.O.A. and graduating fourth in his class. In his fourth year in the medical school, he served part-time as a night intern in the University Hospital. Then during his first year as an intern there, at the suggestion of Dr. William G. Spiller, he presented his first paper at a meeting of the Philadelphia Neurological Society.

Following his internship Dr. Schnabel became associated with Dr. Joseph Sailor, both in his private office and at the Presbyterian Hospital. Soon after that (1914) he joined Dr. John H. Musser, Jr., in the Outpatient Department of the Philadelphia General Hospital. Two years later, after the declaration of the First World War, and already as a First Lieutenant in the Army's Reserve Corps, he was assigned to active duty at Camp Sevier, South Carolina. There, with W. T. Vaughn, he wrote a paper on the serum treatment of pneumonia and emphysema. Following his assignment to Europe he became a Captain and the Medical Chief of an evacuation hospital, where he headed a shock team and was one of the first to give intravenous blood transfusions as shock therapy. Prior to his

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return home in 1919, as a Major, he supervised the repatriation of sick and wounded soldiers in a German Prison Camp.

On his return to civilian life, he again took up hospital and teaching activities, becoming, in 1925, the head of the University's Outpatient Department and, at Dr. David Riesman's death in 1940, the head of teaching for the University in the Philadelphia General Hospital. Meantime, in 1933, he had become a physician to the Presbyterian Hospital and also to the Howard Hospital. In addition he became a consultant to the Rush, Kensington and Nazareth Hospitals. In 1947, he was made a Professor of Medicine at the University and in 1953 a "Truman G. Schnabel Fund for Aid to University of Pennsylvania Students" was established by Bertram C. Hopeman, the husband of one of his devoted patients. In 1961 he received the Shaffrey Award from the Medical Alumni of St. Joseph's College.

As a member of our College of Physicians, he was a Council member, a chairman of its Library Committee and a Censor; he was the first to suggest the construction of an addition to our building for the extension and usefulness of its library. He was a Fellow of the American College of Physicians and at one time its Vice President. Other medical organizations to which he belonged were the Philadelphia Pathological Society, the American Gastroenterological Association and the American Clinical and Climatological Association.

A review of Dr. Schnabel's bibliography indicates the breadth of his clinical interests. Of his sixty-five or more published papers, twenty-four were on gastroenterological subjects, in which he was especially interested, but others concerned arthritic, pulmonary, renal, endocrine and hematologic disturbances. Most of all, however, he was interested in the teaching of students and interns. He has left handwritten notes of many talks to them, in which he emphasized not only the importance of a careful physical examination of patients, but also an understanding of their backgrounds and emotional problems. In addition he pointed out the necessity for each intern, no matter what his special interest, of having a background of knowledge about all aspects of internal medicine, both clinical and investigative.

Although Dr. Schnabel was not primarily an investigator, he did from the beginning manifest a deep interest in all new developments and helped determine their significance clinically. Although artificial fever therapy in the twenties was of questionable value, he studied its effects in the treatment of patients with arthritis and gonorrhea at the Philadelphia General Hospital. When the Hindle electrocardiograph was developed, he personally studied it with Dr. Hindle himself and influenced Dr. Sailor to purchase the one that now is in the Mütter Museum of The College of Physicians of Philadelphia.

As a result of his observations as a practitioner and consultant in medicine, as well as of his experiences at the Philadelphia Hospital as a teacher of students and interns, he recognized the great need for improvement in medical care at all levels. He believed that the major responsibility for such better medical care rested with physicians generally and, to that end, he favored participation in organized medicine. Consequently at one time he served as Speaker of the House of Delegates of the Pennsylvania State Medical Society and as chairman of the Section of Medicine of the American Medical Association. Also he became a president of the Philadelphia County Medical Society and, in 1959, received its Strittmatter Award.

From 1945 to 1951 Dr. Schnabel served as a member of the American Board of Internal Medicine, being its secretary from 1947 to 1949 and its chairman from 1949 to 1951. In his address as chairman of the Section of Medicine of the American Medical Association he defended the Board brilliantly, his

defense resting on his belief that, because of the Board, physicians were becoming better trained and therefore capable of delivering better medical care.

Perhaps an even more significant contribution to the improvement of medical care resulted from his association with the American Foundation for Studies in Government from 1935 to 1955. At first he was a medical consultant and later a member of its governing committee. Directed by Miss Esther Everett Lape and with the help of Dr. Schnabel, this Foundation published, in 1935, two volumes entitled *American Medicine, Expert Testimony Out-of-Court*. This report clearly set forth the problem with which medicine was beset at that time and established a base from which rational plans might be developed for an improvement in medical care. It implied that this should include not only good primary medical education, but also a conveyance of the results of research, both medical and nonmedical, to practitioners. In addition it indicated that if all people were to receive adequate medical care some method of securing payment for it was essential. These objectives led to the establishment of the Regional Medical Program. In further study of the role of medical research in the organization, distribution and quality of medical care, the American Foundation published, in 1955, two additional volumes, entitled *Medical Research, A Mid-Century Survey*.

In his college days, Dr. Schnabel became a member of the Nu Sigma Nu and the Alpha Sigma Xi fraternities. He was a member of the Philadelphia Country Club, where he played golf at times, and a member of the Pennsylvania Sons of the Revolution. His interest in music persisted; he was always fascinated by the concerts of the Philadelphia Orchestra. He kept up his interest in tennis until 1953, when he had a hip injury that partially disabled him for the rest of his life. He maintained some practice, however, until 1966, when he closed his office in the city and moved to a suburban home, where both he and his wife enjoyed a flower garden and other country-like surroundings.

On October 21, 1916, he had married Hildegarde Rohner, who was a devoted and inspiring helpmate to him throughout their married life. She died on February 4, 1971. Two children survive them: Truman G., Jr., and Elizabeth Woodring (Mrs. William D. Chamblin). Except for what he meant to his family, patients and friends, I believe that Truman's greatest contribution to mankind was his concern for and improvement in the education of the practitioners of internal medicine in our country.

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Epidemics of the Future[1]

By PAUL KOTIN, M.D.[2]

DIRE predictions of new and widespread health dangers are routine in the news media and are common topics of daily conversation. Some of the allegations are sound, others patently alarmist and exaggerated, for many important data are lacking. In the last decade it has become clear that the problems are too urgent to be blithely brushed aside and that ignorance must be replaced by information.

Three interrelated events have precipitated the current concern. The first is the altered character of man's environment, the second is the changing characteristics of the general population, and the third is the changing attitudes toward the adequacy of health care, its scope and the training for its delivery. The special implications of the problems and their relation to the health professions are obvious.

The first change allows us to state that the environment plays a predominant role in man's health; second, that rapid technological change, increasing population, and greater concentrations of people into urban centers are compounding the problems of maintaining the environment at a healthful level. The elements included under the rubric of health determinants include at one end environmental agents or experiences that are clearly toxic to living systems —including man—and social and economic forces that have clear associations with patterns of morbidity and mortality. At the other end is the effectiveness of efforts to develop knowledge as a basis for control and the use of this knowledge for the delivery of health care to the entire population. A listing of environmental determinants and their relationship to recognized illness and disease could occupy the entire evening. Suffice it to say no tissue, organ or organ system is immune to the adverse effect of environmental agents. This dictates minute study of the environment as a necessary prelude to the protection of the population. This also points to the necessity for immediate and intensive review of priorities for research in the health sciences and in medical education. The overall role of all efforts should be the development of maximum capabilities for the prevention and treatment of environmentally induced or determined disease.

This new and growing spectrum of medical problems is contributing to a growing obsolescence of traditional precepts and methods of preventive and therapeutic

[1] Theodore F. Bach Memorial Lecture IV, The College of Physicians of Philadelphia, 1 March 1972.

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medicine. There is an urgent need for new principles in this waning era of predominance of infectious disease.

In the past, medical practice was able to cure disease as usually defined, that is, the restoration of the patient to the pre-disease state. The cure era is now being joined in and will probably be superseded by what one may refer to as the era of maintenance medicine.

Treatment efforts at present are for the most part directed to halting the advance of chronic progressive pathological states. The use of low-cholesterol or low-salt diets, defined regimes of limited physical activity, complex drug therapy, etc., in the treatment of degenerative diseases, though for the most part effective, are really examples of tire-patch medicine. Pre-disease states are rarely achieved, and further, the already involved man is progressively at greater risk to subsequent enhanced injury due to the persistence of irreversible tissue damage.

Practices in medical education are progressively becoming more concerned with maintenance, and justifiably so. However, it is imperative that we develop attitudes that will accelerate the recognition of future expanded medical needs. We should increasingly concern ourselves with needs for the next and future generations to the extent that they can be predicted. This can be accomplished without de-emphasizing existing programs geared to maintenance medicine. Rather, it requires the addition of new flesh on the bones of the scientific skeleton of health.

Medicine is again faced with an option: voluntarily planning for the future or facing the reality of most assuredly being dragged into it. The major component of the planning involves the recognition of what has been referred to as preventive and social medicine, community health or community medicine.

All the components of disease causation and prevention have several critical common facets. First, the stresses they include are increasing in concentration and ubiquity; second, the population at risk is rapidly becoming universal; and third, the possibility of avoiding these risks is minimal, if at all present.

And perhaps more important, the most effective therapeutic approach is that of preventive medicine in the modern sense, that is, manipulation of the total environment so that the stresses are eliminated where feasible and where not able to be eliminated are controlled. A critical need is the recognition that the exposure to disease determinants must now be considered in relation to our total social and economic fabric. In a word, all the components of the benefit versus risk equation in relation to factors that affect our morbidity and mortality must become our guiding force, and as a corollary to this, the population effect becomes a preeminent consideration.

We can no longer approach problems of health primarily with the patient as the focal point. A patient can be immunized against a variety of infectious diseases. He can exercise the right of movement, or migration, to a climate or locale compatible with his physiological needs. Populations cannot. Most important of all to us is the unhappy fact that man himself generates the needs which have resulted in the new spectrum of disease causation.

The alternative we then face is that of approaching disease control on a population basis. This is not new. When Snow took the handle off the Broad Street pump, the cholera epidemic in London ended. What we really have to do now is approach health and medicine as though there are a series of handles that either can be removed from pumps or have their vigor reduced so that they assault us less.

I am going to try to dissect the macrocosm that relates importantly to our concern for illness. The role of the health professional as viewed by the population has undergone significant change. We have always had a responsibility relative to the

treatment of illness alone. As effectively as we exercised it in relation to the prevention of infectious diseases, so are we derelict in relation to chronic disease. We now have added to our mission the concern for the quality of life. The medical profession must recognize the growing need for a partnership with those professions concerned with the maintenance of this quality. This includes the sociologist, the urban planner, the engineer, the economist and, if you will, the educator.

The title of my presentation is "Epidemics of the Future." What are the epidemics and what are the components? The epidemics are initially definable in traditional terms of human morbidity—for the most part chronic, degenerative disease including cancer. Regrettably, the traditional approach to epidemic control has little applicability for the new groups of diseases.

The second dimension of future epidemics is that of potential abdication by the health professions.

The third component of the "new" epidemic relates to the failure of those legally responsible for maintaining a minimally hazardous environment to recognize their responsibilities. This is understandable in view of the fact that the infectious disease era was characterized by a clustering of disease in a reasonably defined geographic local—no matter how large—by a short period between exposure to the determinant microorganism and the manifestation of disease, and by a rather specific cause and effect relationship of disease. Only the pneumococcus can cause lobar pneumonia, the tubercle bacillus tuberculosis, etc., but in the epidemics of the future, multifactorial etiology is the hallmark.

As I mentioned, the listing of environmental factors that contribute to the degenerative diseases of any visceral organ would be long. In the instance of cancer, we're embarrassed with a plethora of agents which we know cause cancer in animal models at least. There is no reason to assume that, on an evolutionary basis, an agent which can cause an animal to develop cancer will suddenly stop at homo sapiens. We are as susceptible as a mouse, a rabbit, a dog or a monkey. This example of multiplicity of causes and their interaction surely applies to most if not all chronic diseases. The science and technology for identifying the most important determinants, the indispensable determinants if you will, is still lacking.

Let me become more specific and use lung cancer as an example. A person may work in a chromate, uranium or asbestos mill or mine. He smokes. He drives home in heavy traffic in a crowded city. As he lives, he is exposed to a variety of volatile synthetic agents, since the macromolecule is replacing the element as the primary component of consumer products in the clothes he wears, the tools he works with, the food he eats. All contribute somewhat, but which is the trigger we do not know. Now, what is true for cancer is true for all other degenerative diseases in which the cancer-causing chemicals are replaced by diet, obesity, smoking, etc., in the pathogenesis of disease and by a whole array of unknown substances for degenerative diseases of the central nervous system.

How real is all of this concern and what are we to do about it? I believe there are two courses of possible action to provide adequate health maintenance. One is to continue to apply most of our efforts and resources to the care of patients and allow environmental factors to produce more patients. The second is to create an environment which will support good health and thus decrease the need for patient care. My conviction is great that the second alternative is the only viable one. Medical care represents the most expensive component of the total health spectrum. Health care prevention, as exemplified for example by environmental control, is the most effective means of reducing health costs.

The dimensions of the present medical

care costs can be glimpsed from the following figures: cost of health services is about $70 billion a year; of this, $12 billion is from federal and $58 billion from non-federal services. It is estimated that a minimum of 10% of these services is clearly attributable to adverse effects of the environment at an annual cost of about $7 billion.

The loss in wages and production brought about by the worker's illness attributable to the work environment is $25 billion annually. This is approximately one third of the total cost of $75 billion. When added to the cost of health services, it reaches a total of $32 billion a year as the cost of environmentally induced disease. To this figure, enormous though it is, must still be added the costs of compensation and rehabilitation. Again, assuming that one third of the total cost of $10 billion in compensation is attributable to the environment, the annual expenditure is approximately $3.3 billion. Figures are not readily available for the cost of rehabilitation. By comparison, it appears to be quite minor—about $100 million.

The final estimate, therefore, of the cost of environmentally induced disease, i.e., health service, loss of wages, and compensation and rehabilitation, is in the neighborhood of $35 billion a year. This constitutes a staggering burden, tolerated only because it is hidden in the increasing annual bill for medical attention of all kinds. It can only increase and at some point its consequences will be disastrous. When further dissected, the conclusion is inescapable that the burden of relying specifically upon traditional approaches to medical care in order to meet environmental effects is staggering. The environmental contribution to the total medical bill, still largely unidentified, can only rise, probably drastically. The awesome consequences will inevitably be unacceptable and some alternative must be found.

The question we therefore face is to what extent we should seek to reduce the economic and social burden of care by attention to prevention rather than, as is currently the case, to the alternative of therapy exclusively.

What does this mean in terms of education for the health professions? First of all, I think we have to ask ourselves, what can we adopt from the microbiological era principles to the microchemical era and use effectively to meet our needs? If we accept that, by definition, the only true control of these diseases is prevention or delay, we have to examine whether the microbiological characteristics of a microorganism might not be superseded by an understanding of the chemistry of polymers and their anatomic and metabolic fate.

We have also to ask ourselves whether the chemistry of flammable fabrics might not be of as much concern to the health professions as were the rudiments of hygiene a half century ago. Should not highway safety, including the engineering of highways, the science of impact injuries, the behavioral aspects of getting behind a steering wheel, be incorporated in our curriculum no less than we have incorporated the fundamental aspects of inborn errors of metabolism?

Let me now emphasize, we are not dealing with an either/or situation. We're dealing with a need for a combination, an evolutionary change, in medical education. This has really not developed. Now all of this, I think, has special meaning for the population.

How does the population view the medical professional as the standard bearer in the health delivery team?

How effective have our past attempts to control chronic disease been? Is there any hope for control through treatment?

If indeed we know nothing more, we know that chronic illness is equitable, in many areas, with catastrophic illness. We can measure this rather precisely in the individual patient sense. I have given some

figures to show its social or economic impact.

History offers little comfort. Really very little has been advanced in terms of the problems to which we must now address ourselves. Are we attacking the problems of morbidity and mortality in the adult population? One measure of effectiveness of health care is life expectancy, and the figures at first glance look good: in 1900, 47 years; in 1920, 54 years; and in 1964, 70 years. These figures can be terribly misleading if you use survival from birth alone as the basis for measuring life expectancy. Let's use 40 years of age, and this is the age that is critical to us in the sense that the percentage of the population living 40 years and older is increasing.

If you lived to be 40 years old in 1900, your life expectancy was 68 years. In 1920, it was 70; in 1964, 72. Virtually no change over two thirds of a century in terms of our ability to address ourselves significantly to mortality primarily due to chronic disease.

This provides an additional characteristic of future epidemics—that is the failure of increasing significantly the life span during the decades of chronic disease prevalence. We have no analogue of success with infectious disease.

One factor may be that survival with chronic diseases is no longer the exclusive responsibility or the result of the physician. The chronically diseased patient who can be treated medically is more susceptible to virtually every force to which he is exposed. This increased susceptibility is manifest in the total spectrum of his life.

Accommodation to chronic disease requires social equilibrium, economic equilibrium, cultural equilibrium, psychological equilibrium. It would be folly for me to suggest that the medical profession can address itself to these dimensions. But it would be equally foolish to assume that the natural history of a patient with disease is going to be amenable to medication that comes out of a bottle or out of a textbook of medicine when its cause is barely discussed in the textbook.

Traditionally, epidemiology is defined as the study of the determinants of disease. We must recognize a whole variety of causative agents which are not clearly medical. It is not medicine's job to control these—it can't be. But it is medicine's job to be aware that what comes from a prescription may very well have its effect neutralized by what comes out of the pay envelope at the end of the week, by the unacceptable living pattern and allocation of living space to a patient.

And perhaps more importantly, the concept of a light at the end of the tunnel that was our hallmark in the infectious disease day is not applicable today: we knew that you must either die or recover from meningitis, from pneumonia, or from measles, mumps or whooping cough. Reciprocally, we are guaranteed we're not going to have an undamaged heart after an attack, our cirrhotic liver will be permanently seamed, and our emphysematous lung is never going to regenerate alveolar septa.

The epidemics of the future will not have as their presenting symptoms fever, cough, chest pain, and rubs; but rather they almost surely will include decreased productivity, social unrest, increased crime rates, and other manifestations of what we call social disease. The role of the medical profession in the prevention and control of these diseases is in danger of going by default, if attitudes do not change.

The Adam Politzer and Joseph Hyrtl Otologic Collections at the Mütter Museum

By SYLVAN E. STOOL, M.D.,[1] BENNETT I. KEMPER, M.D.,[2] AND MARLYN J. KEMPER, M.S.

IN the fall of 1970, a request was made by the chairman of the Committee on the Mütter Museum to the members of the Section on Otolaryngology of The College of Physicians of Philadelphia for an evaluation of the Museum's otologic specimens prepared by Adam Politzer and Joseph Hyrtl. Consequently, the specimens were photographed in color and black and white. Several consultants, including Nobel Prize-winner Georg von Békésy of the University of Hawaii, Captain Vincent J. Hyams of the Armed Forces Institute of Pathology, and Juergen Tonndorf of The College of Physicians and Surgeons of Columbia University, visited the collections commenting on their value and state of preservation.

During the interim, the evolution of Politzer's temporal bone dissections has been studied as a reflection of his contribution to otology. Because modern otologists, like many nineteenth-century naturalists, are remarkably unaware of the existence of the remainder of Hyrtl's scientific materials, including microscopic injections, corrosion preparations and the crania collection found at the Museum, an extensive inquiry was conducted concerning the identity of the man who initiated a program of collection which included the ossicles and labyrinths from 174 species. As the following reports demonstrate, the otologic artifacts at the Mütter Museum present an unparalleled opportunity for otologists to observe the normal and pathological human and correlative anatomy of the ear.

I. A Remarkable Discovery: The Adam Politzer Collection

Located among the Bohemian glass, bent wood furniture, and meerschaum pipes in the Austrian section of the main building at the Philadelphia Centennial of 1876 was the hallmark of the medical exhibits, the collection of temporal bone dissections prepared by Adam Politzer. This prize-winning display, representing the work of many months, ultimately spearheaded vast changes in American otology, for it enabled practitioners to visualize minutiae and internal structures previously undetected.

Adam Politzer, the son of a merchant and the grandson of a physician, was born on October 1, 1835, in Alberti, Hungary. He received a classical education and earned a doctorate in medicine from the University of Vienna in 1859. After subsequently studying physiology at major European universities, Politzer returned to Vienna where ultimately he was made the first professor of otology in 1870. In recognition of his clinical acumen and scientific approach, Politzer was awarded many honors; he was affectionately called "The Father of Modern Otology" by students of all nationalities.

By the 1870s, Politzer had created an acute awareness of the need for accurate otological diagnosis and improved methods of aural surgery. Thus, when his collection of otologic artifacts appeared at the exhibition, hordes of visitors, including physicians

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from all parts of the country as well as curious laymen, inspected the display. Numerous charlatans congregated around the area seeking to capitalize on the interest in the collection by peddling secret nostrums and patent medicines to those individuals with aural afflictions.

In conjunction with the Centennial celebration, an international otological congress was organized by members of the American otological society. Although Politzer was unable to attend the first session held in New York, he actively participated in subsequent meetings of the congress, submitting papers on a vast range of otitic anomalies.

At the close of the Centennial, Thomas Hewson Bache, the curator of the Mütter Museum of The College of Physicians of Philadelphia, negotiated the purchase of the Politzer exhibit for eight hundred dollars. Despite Politzer's distinguished position at the university based on his international reputation, there were factions which did not view him kindly. When the news reached Vienna that the collection he had sent to America had been sold, he was depicted in cartoons appearing in local papers as a common thief snatching temporal bones for sale. To appease the public, Politzer requested a letter from The College of Physicians of Philadelphia stating that this payment was for the mounting and preparing of specimens rather than obtaining them.

The collection of temporal bone dissections currently housed at the Mütter Museum is in a wooden case with each bone mounted on a small pedestal covered by a bell jar. The methods of securing the bones and producing the dissections have been described in detail by Politzer in *Die anatomische und histologische Zergliederung des menschlichen Gehörorgans im normalen und kranken Zustande für Anatomen, Ohrenärzte und Studierende,* published in 1889, with the English version, *The Anatomical and Histological Dissection of the Human Ear in the Normal and Diseased Condition,* appearing in 1892. After attending the sessions of the first Pan-American Congress held in Washington, D. C., in 1893, Politzer visited the Mütter Museum where he noted that his specimens were in fine condition. The state of preservation after the intervening decades is still good, but proper steps should be taken to prevent decomposition.

The Politzer collection reveals a variety of chronic changes involving the tympanic membrane and other temporal bone structures. Many of his anatomical preparations demonstrate the relationship of the tympanic membrane to the middle and inner ear structures in both children and adults; the topographical relationship of the semicircular canal and the cochlea to the drumhead; the occurrence of necrosis involving destruction of the conductive and sensoryneural structures with erosion into the sigmoid sinus; and the presence of semi-lunar, kidney-shaped, and multiple perforations of the tympanic membrane. The extent to which Politzer understood and depicted the aforementioned subtleties of temporal bone structure is illustrated in the accompanying photographs (Figure 1). For the otologist, a firsthand view of this historic collection at the Mütter Museum is an educational inspiration. These specimens represent a tangible legacy which continues to be pertinent today.

II. Whatever Happened to Joseph Hyrtl?

The names of such nineteenth-century naturalists as Broca in France, Darwin in England, and Virchow in Germany are immediately identifiable as an integral part of our modern scientific heritage; yet, the name of one of their equally prominent contemporaries has by now been totally enveloped in obscurity. The biography of Joseph Hyrtl, who was acclaimed as an eminent natural scientist in Europe during the height of his career, gives testimony to the evanescence of

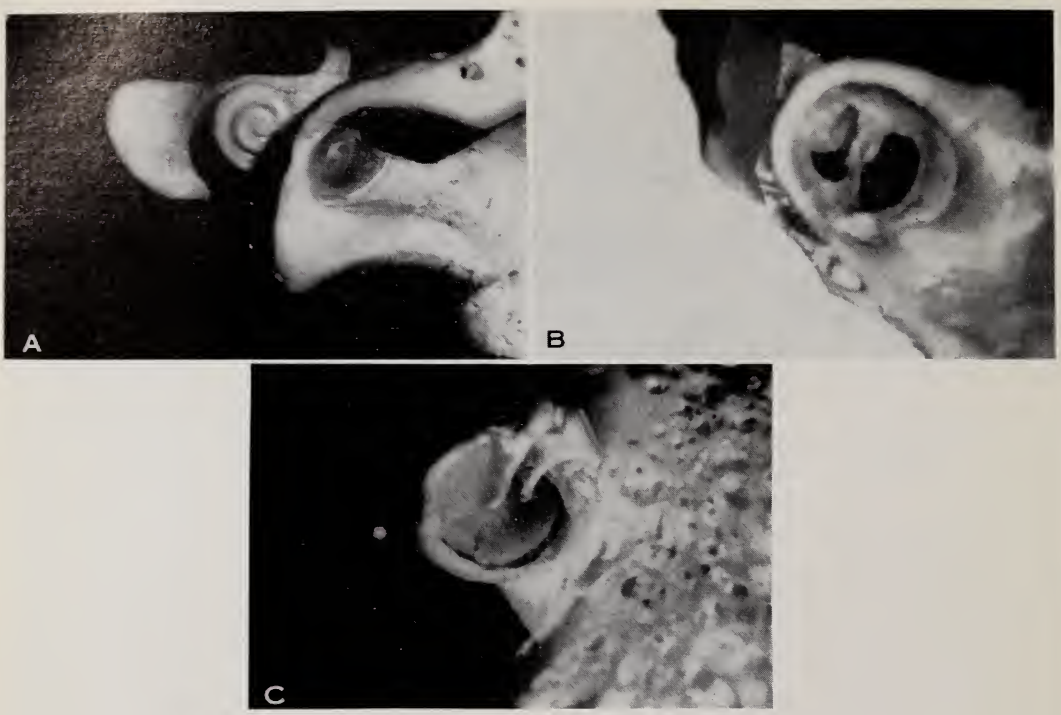

FIG. 1. (a) Normal tympanic membrane and cochlea; (b) perforation, double of the tympanic membrane; (c) normal tympanic membrane and ossicles.

greatness, for Hyrtl's notoriety has been submerged in oblivion. To account for this paradox is to address oneself to one of the most inexplicable facets of scientific history, namely, the vicissitudes involving the unrelated variables of fame and achievement (Figure 2).

Although Hyrtl was considered to be a pillar of the new Vienna school, he was summarily forced from his academic position into retirement. This action of factional pettiness further obscured his scientific genius, because less than a decade after his expulsion from the contemporary scene, historians commenting upon the state of Viennese medicine wrote that the distinguished Hyrtl was deceased.[3] On the other hand, in a rather moribund form of overcompensation, colleagues in the United States recorded Hyrtl's "present address" in the *Transctions of the American Philosophical Society* eight years after Hyrtl's death, which occurred on July 17, 1894.

Joseph Hyrtl was born in Kis Marton, Eisenstadt, Austro-Hungary on December 8, 1810/December 7, 1811.[4] Hyrtl's family was of modest circumstances, for his father, an accomplished musician, played an oboe under Haydn in Count Esterhazy's band.[5] As a student at the University of Vienna,

[3] Neuburger, Max: *British Medicine and the Vienna School: Contacts and Parallels.* London, William Heinemann Medical Books Limited, 1943, p. 108.

[4] Whereas Hyrtl's birth date was recorded in the baptismal register of Kis Marton as occurring on December 8, 1810 (Hyrtl's Baptismal Certificate, courtesy of Professor August Bangert, Beethovenstrasse 36, Perchtoldsdorf, Austria), Hyrtl claimed that the date and year of his birth were December 7, 1811 (Hyrtl to the Secretary of the Österreichische Akademie der Wissenschaften July 31, 1857, courtesy of the Österreichische Akademie der Wissenschaften, Vienna, Austria).

[5] Garrison, F. H.: *An Introduction to the History of Medicine with Medical Chronology, Suggestions for Study, and Bibliographic Data.* Philadelphia and London, W. B. Saunders Company, 1929, p. 463.

FIG. 2. Photograph of Joseph Hyrtl, courtesy of Bildarchiv d. Instituts f. Geschichte d. Medizin, Wien.

Hyrtl's main fields of investigation were the osseous and vascular systems. After his graduation in March, 1835, from the university, he studied for a year in Paris and a year in London. The years spent abroad set the tone for much of Hyrtl's later work and established the foreign relationships upon which he was to depend.

When he returned to Austro-Hungary, Hyrtl succeeded to the professorship of anatomy and surgery at Prague, a position which he held from 1837 through 1844. He subsequently came back to the University of Vienna where he taught regional and gross anatomy in the straight Vesalian tradition from 1845 until his retirement in 1874.

Hyrtl's fame rested primarily upon his abilities as an anatomic technician, lecturer and popular scientific author. He sought through comparative anatomical studies embracing the total network of organic life to clarify the nature of man and the manner in which man should be studied as a species. Insofar as Hyrtl held fast to an outmoded philosophy based on a mixture of

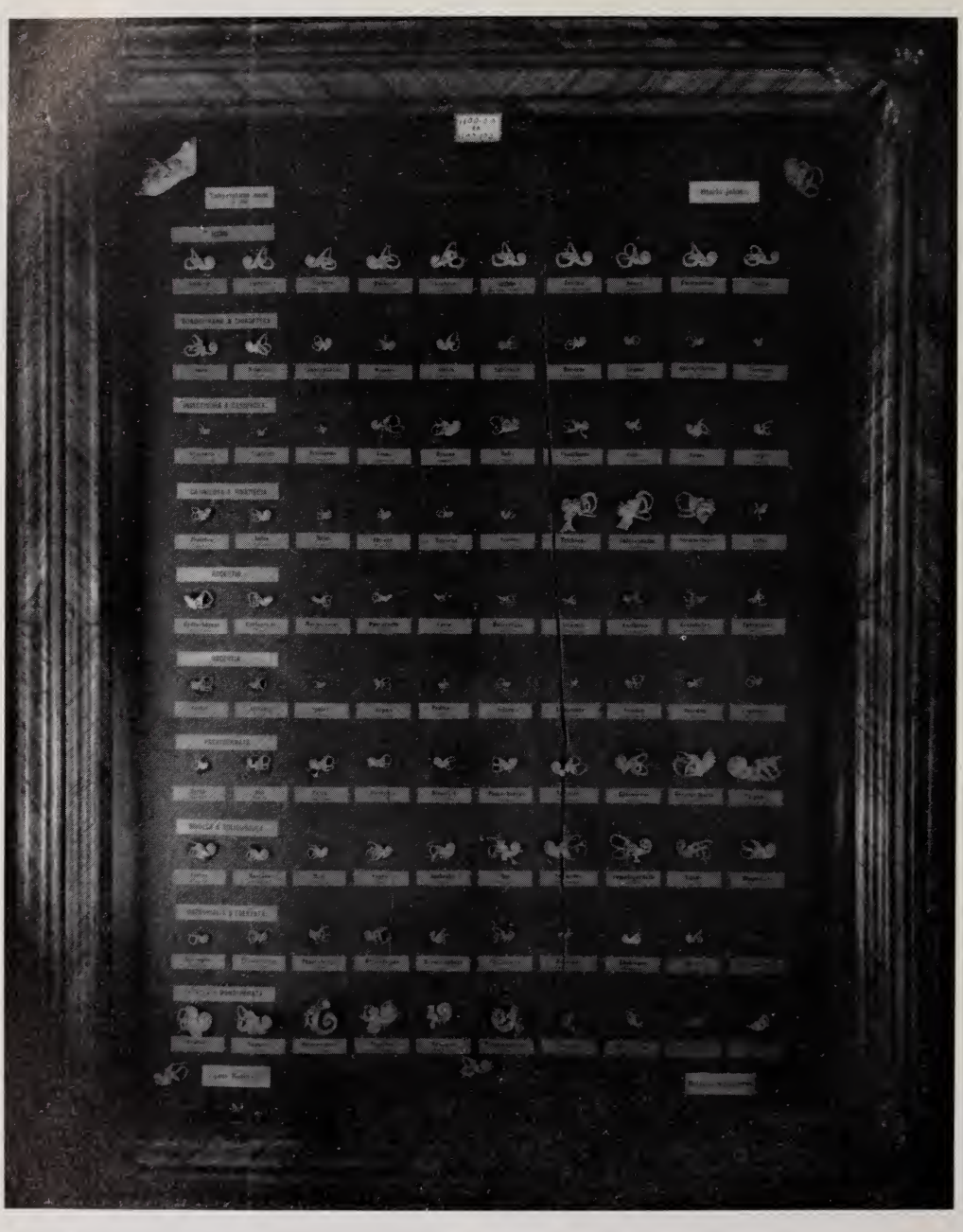

FIG. 3. Case of labyrinths of man and all mammalian families. The following description of the case of labyrinths was written by Hyrtl:

IT REQUIRED FOURTEEN YEARS TO BRING TOGETHER THE MATERIAL, THE ELABORATION OF WHICH WITH RESPECT TO THE ORGANS OF HEARING, MAKES UP THE CONTENTS OF THE TWO CASES BEFORE US.

Labyrinths of the ear of man and all mammalian families. The First Row *belongs to man at different periods of life. It begins with a five month old embryo, whose outer semicircular canals appear still in the condition of a simple swelling of the vestibule. It is evident from*

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Darwinian evolutionism and special creationism, he must be viewed as representing an endpoint rather than a beginning of scientific development. Being both scientist and theist, Hyrtl clearly demonstrated the conflict which marked the age.

Hyrtl's work was heavily impregnated with theological notions derived from the conservative tenets of German Catholicism. In his attempt to merge miraculous, metaphysical observations embedded in a traditional religious orthodoxy with concepts of ancestral type, inheritance and descent, he became engaged in a Cartesian dualism of mind and matter. While Hyrtl conceded that man's bodily organization could have originated from more primitive life forms, he simultaneously attributed man's inner, dynamic, vital, thinking essence to the spiritual soul located somewhere in the brain. Since Hyrtl believed the brain served as an intermediary link connecting the immaterial God-given soul with an earthly existence, he regarded the attempt to delineate the labyrinth of the brain with an anatomical knife as being just as worthless as the effort to split a monad with a hammer or divide a spiderweb with a carpenter's saw.[6]

Although Hyrtl initially accepted the Darwinian tenet of natural selection, he looked askance at notions concerning continuous organic change and extinction, for Darwinism, with its emphasis on the struggle for existence, glossed over the harmony and equilibrium of organic life. Hyrtl ultimately resolved the problem of the "isms" by reconciling himself to the scholasticism of the Catholic church and capitulating to the demands of Pius IX to venerate God's infallible intellect. Hyrtl, therefore, regarded man not as a flesh and blood substance but as the embodiment of an immortal thought; and he considered transformism to be a *Vorstellungsart,* or ideal proc-

[6] Hyrtl, Joseph: *Rede bei dem Antritte der Rektorswürde an der Wiener Universität. Am 1 Oktober 1864.* Reprinted in *Professor Joseph Hyrtl.* Franz Wolf and Gottfried Roth Vienna, Paul Molitoris, 1962, pp. 95–96.

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this row that the labyrinth has already reached its full growth in size and shape in the new born child.

The Second Row *contains the labyrinths of the ourangoutang, of the other quadrumana and of the flying dog from Madagascar (Pteropus-Edwardsii). In the* Third and Fourth Rows *are found gymnura enplares, Latax trichecus and the prehistoric bear and hyena. The sea-lion occupies the right hand upper corner of the picture.*

In the Fifth and Sixth Rows *(Rodents), the labyrinths with cochlea wound five times are especially striking.*

The Seventh Row *closes with giant pachydermata (Tapirus), rhinoceros, hippopotamus and elephas.*

The Eighth Row. *The giraffe and the horse are distinguished for the size and the thinness of their semicircular canals.*

The three last labyrinths of the last row show the transition from the mammalian type to that of the birds. The smallest development (in comparison with the size of the body) belongs to the labyrinth of the whale and dolphin. In the lower right hand corner, the semicircular canals of a sperm whale, over 22 meters long, from the North Cape, are no longer than those of a dog.

The contents of the this one case may lay claim to morphological value alone. Whatever functional differences are conditioned by the changes in the form of the labyrinth, we cannot now even guess, and shall learn no more concerning them in all eternity. Since the labyrinth is buried in the hardest of all bones of the skull (so hard that in certain animals it gives a spark with steel) we cannot attain its representation by the usual preparations. The chisel and file produce only deformities. I have therefore resorted to the corrosion of the canals of the labyrinth. No other method procures such a correct view of the capsule of the internal ear. If there were no such thing as corrosion, we would surely know absolutely nothing of the pachydermata, of the edentata nor of the prehistoric mammals.

ess, with man representing the pinnacle of perfection.

Hyrtl's collections were illustrative of his belief in the pre-existing plan of nature. Rather than clarify processes of adaptation based on modification through descent, Hyrtl sought to define formal affinities. The nature of structural transfiguration was depicted in Hyrtl's comparative anatomical preparations exhibited in institutions

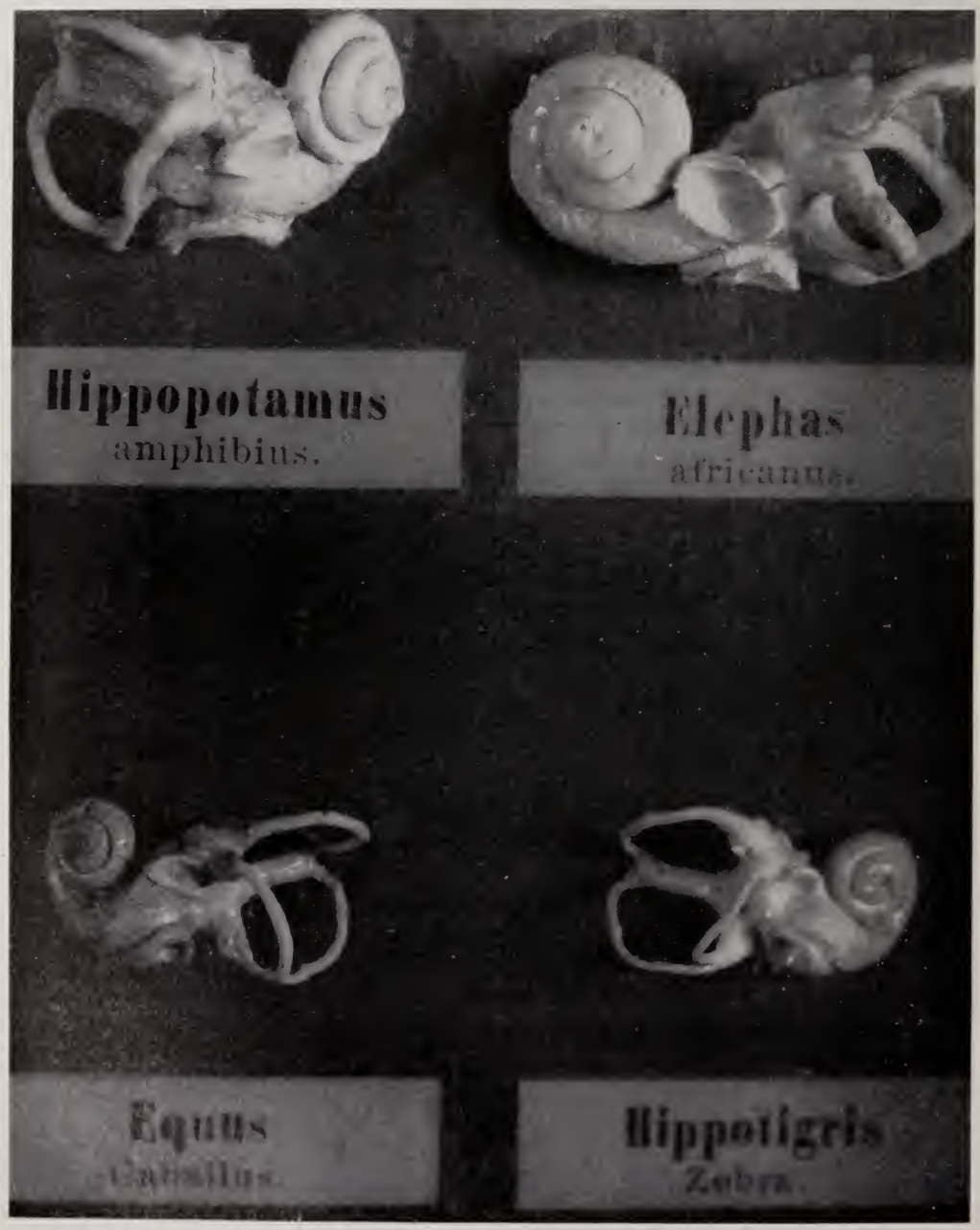

Fig. 4. Detail of labyrinths from the Hyrtl Collection.

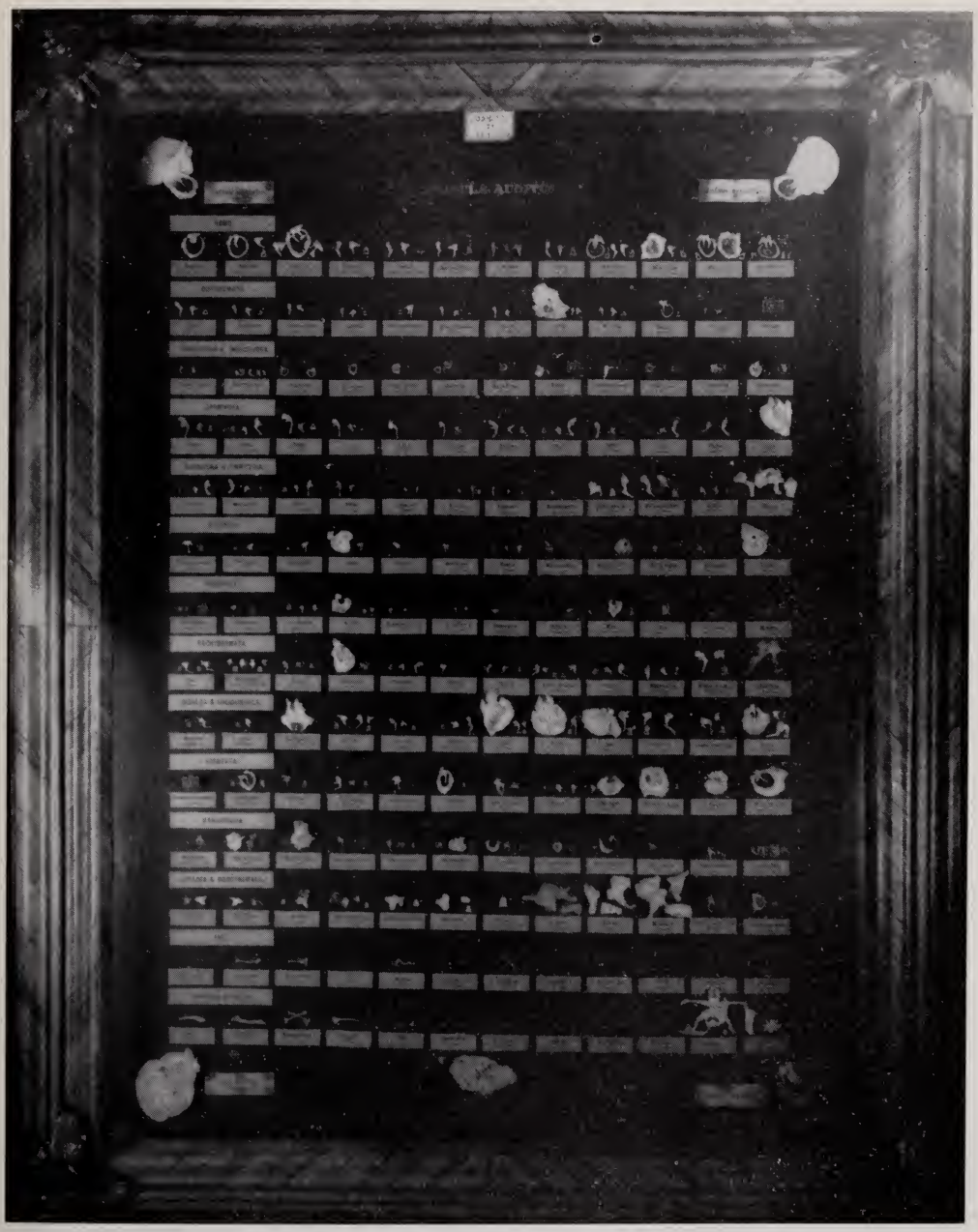

Fig. 5. Case of ossicles of the ear from all kinds of vertebrate animals (in 173 groups of three and six each). These bones have never been collected in such neatness and perfection before. The tiny ossicles of the small insectivora, rodents, and marsupials are fastened on green-edged blocks in order to bring them nearer the glass of the frame. Views of the human tympanum are placed in the upper corners of the case. Tympani of the buffalo and of the embryo of the elephant are in the lower corners.

The following description was written by Hyrtl:

The value of both cases represents a small fortune, and whoever would endeavor to bring a

Legend continues on the following page.

throughout the world and currently housed at the Mütter Museum of The College of Physicians of Philadelphia. Hyrtl's corrosion specimens on display at the Mütter Museum include preparations of the spiral vessels and spiral valve of the lacrimal duct showing variations according to age; the branches of the splenic artery of the zebra, boar, bison and camel; the pathological and normal conditions of the kidney in animals ranging from the gnu to man; the liver of the jaguar, orang-utan and man; the complete arterial system of the human embryo and placenta; and the arteries of the hand and foot. Furthermore, Hyrtl's preparations of the middle and inner ear in all classes of vertebrates demonstrate the modifications of topographical structures found in the organ of hearing. In fact, Hyrtl specified that his otologic collection (Figures 3, 4, 5 and 6) consisting of 315 objects, could not be sold individually, since the value and scientific interest of the collection was most pertinent in exhibiting changes in morphology and the relationship of the organization of animals to the higher organization of man.[7]

Subjected to the intellectual pressures emanating from a conservative and doctrinaire Catholicism, Hyrtl ultimately allowed religious maxims to dominate his universe to the almost total exclusion of post-Darwinian notions. As a consequence, Hyrtl's theology colored the value of his conclusions regarding the nature of man as a physical being and ultimately contributed to his disappearance from the ranks of the truly innovative nineteenth-century naturalists. Through Hyrtl's commentaries, the scholar is enabled to reconstruct the life of an old-fashioned anatomist capable of solving particular problems on an empirical basis but eventually capitulating to theistic revelations in postulates concerning the ultimate universal truths.

[7] Hyrtl to Mütter Museum Officials, February 26, 1866, courtesy of the Mütter Museum of The College of Physicians of Philadelphia.

Legend for Fig. 5.

similar collection into existence, must first of all fortify himself with patience. I mention, by way of example, the gorilla skull, considerably injured by a shot, and purchased for 1000 francs. My connection with anatomists in foreign lands placed me in a position to procure rare and indispensible skulls in exchange for injection preparations for the microscope. It requires a firm resolution to shatter these animal skulls and offer them to an anatomical caprice, in order that the organs of hearing of vertebrate animals should no longer remain the most imperfectly known of all the organs of special sense. There is a funny story connected with the petrous portion of the temporal bone of the hippopotamus. Since the time of the Roman emperors, no living hippopotamus had come to Europe. The anatomy of the internal organs of this animal remained, therefore, unknown. Between 1830 and 1840, the French government sent M. Arnould D'Abbadic as ambassador to the king of Seboa. The academy of Paris added to his instructions the request to transmit in a preserving fluid the body of a young hippopotamus. The undiplomatic duty was discharged by the ambassador with great tact. The king was greatly afflicted with rheumatism of the joints, and addressed to the ambassador the question of whether or not he could help him. In the Orient, all ranks are thought to be masters of the art of healing. M. D'Abbadic answered 'certainly.' Procure the medicine, I'll give my crown if I shall become well again. 'Not at all necessary. The medicine is found in your own land. It is the fat of a hippopotamus. Gently, you must not go so fast. It must be the fat of a pregnant animal.'

These captions are excerpts from correspondence between Prof. Hyrtl and the curator of the Mütter Museum of The College of Physicians. Joseph Hyrtl was a noted Viennese anatomist of the nineteenth century who had wide interests in comparative and human anatomy. Prof. Hyrtl established a museum in Vienna which contained in excess of 5,000 specimens, many of which were destroyed during World War II. The labyrinths and ossicles are displayed against green velvet backgrounds and housed in beautifully carved wooden cases.

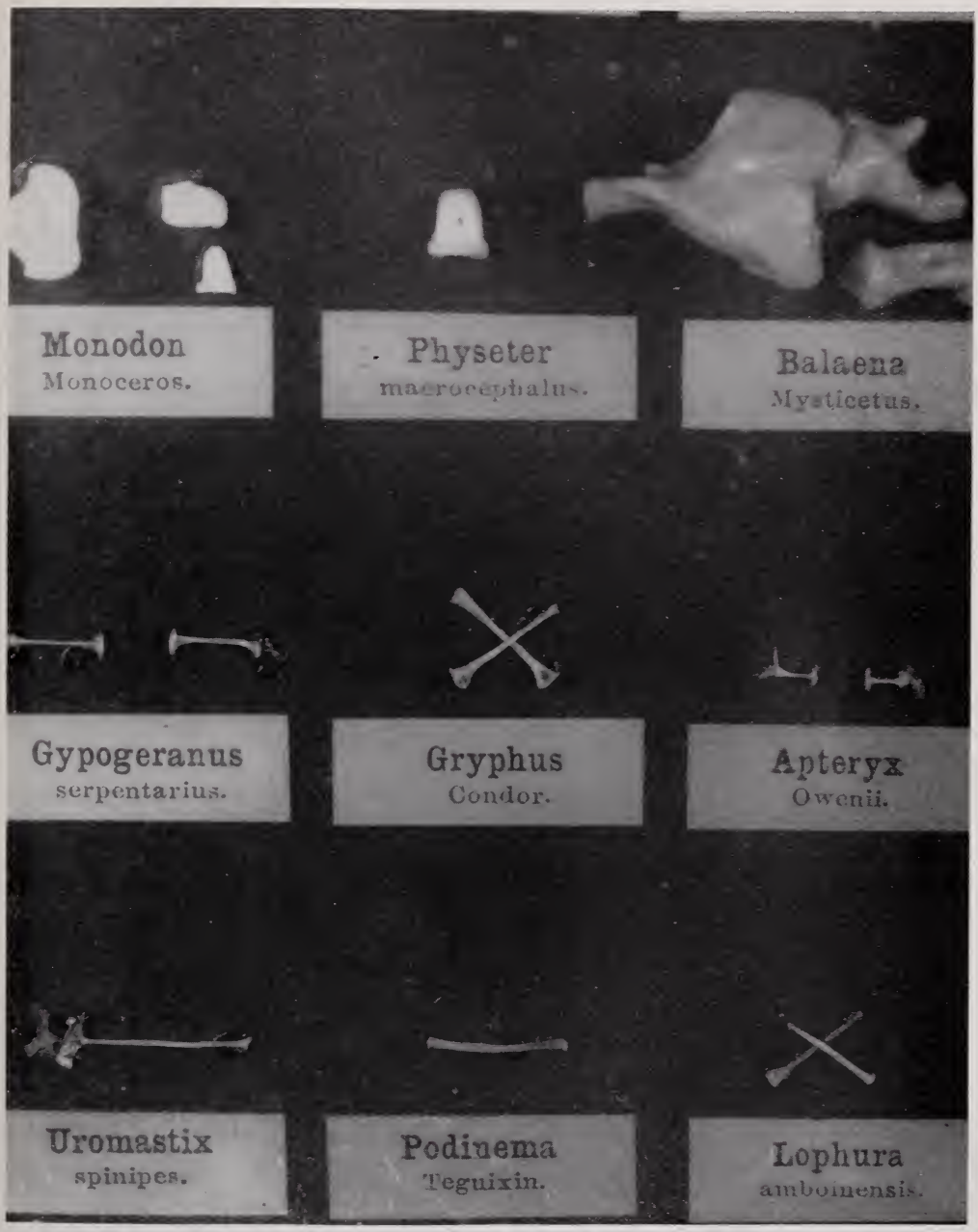

Fig. 6. Details of ossicles of whales and birds.

Acknowledgments

The aid of Mrs. Elizabeth Moyer and the staff of the Library of the College has been invaluable.

The material on Hyrtl is abstracted from Mrs. Kempers' Masters' Thesis, submitted to the Department of Anthropology, Temple University. A copy is available at The College of Physicians.

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Residents' Participation in Curriculum Planning and Execution[1]

By JAVAD RAZANI, M.D.[2]

HISTORICALLY, in the traditional psychiatric residency training curricula, all or most of the responsibilities for planning and execution of the various programs have been carried out by the faculty. Residents have been passive and at times apathetic participants. Currently, however, on a national scale, there is an evolving demand for more participation on the part of those for whom the programs or products are designed. This trend is reflected in proceedings of the Workshop on the Medical School Curriculum held in Atlanta, Georgia, in 1968, in a report on the need for student participation (1) and also, at the house staff level (2). Concurrent with this social response for participation, at Temple University Health Sciences Center, Department of Psychiatry, there has been a dramatic increase in the residents' participation in planning and execution of the curriculum during the past several years but more so during the past two years (3).

As a result, and in contrast with the previously existing system, this experience has become a very significant one for the residents and an integral part of their learning process. Since the residents are involved in all stages of their education, they have become active participants in the planning and take responsibility for the content and execution of the educational programs. This is done primarily through a Curriculum Committee, which consists of two or more representatives from each resident class. There are also related subcommittees for grand rounds, journal clubs and reading seminars plus combined staff-resident committees in the principle disciplines of dynamic psychiatry, behavior therapy and basic sciences. These combined staff-resident committees carry on evaluation of the planned programs on a continuous basis during the year and take responsibility for proper execution of their contents.

This continuous interplay—the ongoing supervision, the mutual cooperation of the residents and their Curriculum Committee with the faculty and its related committees, residents' taking responsibility for proper execution of the programs and active participation by all parties concerned—forms the basis of this approach. While there was always a lag between the time when a change was necessary and when faculty finally responded, this has now been greatly reduced. We now feel that the program is responsive to the residents' needs and aspirations in a rapidly changing field of modern clinical psychiatry.

Specifically, the program functions as follows:

1. Toward the end of each year, a new Curriculum Committee is formed consisting of two or more representatives from each resident class. Members of the Curriculum Committee reflect the views of the entire class and are selected by them. A chairman is selected from the third year level. Currently I am the chairman of this committee. The Curriculum Committee meets frequently to review the suggestions, critiques and appraisals presented by the members and also, by the previous year's ongoing

[1] This paper has won the Kenneth E. Appel, M.D., Award, presented annually by the Philadelphia County Medical Society to a resident in psychiatric training in the Delaware Valley. It was presented at the Annual Meeting of the American Psychiatric Association, Dallas, Texas, 2 May 1972.

[2] Third year resident in psychiatry, Temple University Health Sciences Center, Phiiladelphia, Pennsylvania 19140.

subcommittees, combined staff-resident committees and any interested resident or staff member. After recommendations are formalized, they are submitted to the Director of Residents' Education for his review. Curriculum Committee members hold several sessions with the Director in order to finalize the recommendations. Conflicting issues, which have been infrequent, are usually resolved by the Director.

2. Concurrent with the above process, subcommittees are formed from the second and third year classes to be responsible for the content and scheduling of the monthly grand rounds, journal clubs and literature reading seminars for the coming years. A subcommittee is also formed to plan the orientation program for the incoming residents; this has been particularly successful.

3. Combined staff-resident committees are also formed. These usually consist of three residents (one from each year) and three representative teaching staff members, one each from dynamic psychiatry, behavior therapy and basic sciences. Their function begins after the progam gets underway. Then, they meet on a regular basis to evaluate the proper execution of the contents of the programs in each area on an ongoing basis.

4. After the Director of Education has finalized the residents' Curriculum Committee's proposals, combined meetings are held with the teaching faculty's steering committees in the three basic areas mentioned. Thus, the teaching staff members receive direct feedback on the quality of their work and in a spirit of open communication residents and staff become aware of each others' needs and aspirations.

A specific example of how the program functioned in one instance is described below:

For several years, residents at all levels were dissatisfied with the format of one of our courses. This course was taught on a weekly basis for one and one half hours. A sample of the first year residents' appraisal of this course submitted to the Curriculum Committee was: "The course is poorly organized and repetitive. The same material could have been covered in 10–20 sessions (rather than 40 sessions). By and large, a spirit of free inquiry was discouraged." The critique of the second year group was similar to the above and recommendations of both groups included: a shorter course with fewer instructors covering larger segments; more communication between the various instructors; emphasis on demonstrations of the techniques toward the end of the course, rather than pure didactic material throughout the course. After deliberations and refinements by the Curriculum Committee, proposals were submitted to the Director of Education for his review. Then a meeting was scheduled between the members of the Curriculum Committee and this course's Steering Committee consisting of teaching faculty in that discipline. In a frank and friendly atmosphere, suggestions from residents and staff members were discussed. The result was the formation of a lively and meaningful course for the current year which satisfies the aspirations of the residents and also reflects the results of long years of teaching experience by the faculty. Above all, ongoing responsibility for the execution of the contents of this course rests with the staff-resident combined committee. Modifications, judged to be necessary by the staff-resident combined committee, will be implemented during the year as indicated. This course now attracts the voluntary attendance of most of the residents. They participate actively during the sessions. Residents prepare for the sessions by means of outlines and handouts given on each topic prior to the session.

This is in direct contrast to the previous experience, when for some time residents had aired their dissatisfaction individually and haphazardly without results. Usually, after an immediate supportive response

from a staff member present, the matter was gradually forgotten, resulting in apathy and poor attendance in the sessions.

For years, residents had requested an in vivo psychotherapy demonstration session on an ongoing basis to observe various techniques. Again, their wish materialized only when the Curriculum Committee actively recommended the program. This is another example of accomplishments under the new system.

The continuing interplay and mutual responsiveness, with the degree of involvement and the taking of responsibility by the residents, has created an atmosphere of learning through active participation which is much more meaningful to the individual resident than the previously existing program.

For this reason, this approach is noteworthy for other residency training programs.

Acknowledgment

The author wishes to thank Dr. Anthony Panzetta for his critical evaluation of this paper and also Drs. R. Bruce Sloane (Chairman of the Department), Max Pepernik (Director of Education) and Fernando Bianco (Chief Resident), through whose efforts the program has been successful.

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Presentation of Margaret I. Handy, M.D., for Honorary Fellowship

By JOSEPH STOKES, JR., M.D.

President Blumstein, Fellows of the College, and guests:

I have the great privilege of introducing for Honorary Fellowship Dr. Margaret I. Handy of Wilmington, Delaware, the first American woman physician who has been accorded this high honor.

Anyone who may have heard at the Christmas week meeting in Philadelphia of the American Association for the Advancement of Science the additional chapters in the remarkable studies of primate development by the Harlows of Wisconsin and the importance of the first few years of life for the promotion of physical, psychological and emotional health as reviewed at that meeting by Dr. Jerome Bruner of Harvard, and anyone who has followed the important contributions of Lorenz of Munich, Scott of Bar Harbor, Piaget of Geneva, and of many others in this area of development can far better realize the remarkable contribution that Dr. Handy has made to the well-being of the entire lower Delaware Valley. In her quiet, selfless care of a major portion of the present and future leaders of that entire area, she has made the type of professional and humanitarian contribution that more than warrants our recognition of her tonight. In this critical era of re-emphasis on the essential value of comprehensive medical care, it is highly appropriate that we honor someone whose entire professional career has been spent in the care of families, in a non-academic setting.

Many of you who have not met her in person still may well have felt the warmth of her personality and work as painted (on canvas) by the distinguished artist Mr. Andrew Wyeth, who fortunately is here with us tonight. He caught so magnificently her image and character in his now famous painting of her carrying her little black bag.

Dr. Handy has received both local and national recognition. After graduation from Goucher College, she received her medical degree from The Johns Hopkins University School of Medicine and a little later became a pediatric resident there at the Harriet Lane Home of The Johns Hopkins Hospital. Her matriarchal development of generations of leaders in the Wilmington area began in 1918. She established the Mother's Milk Bank at the Delaware Hospital in 1946, received the Josiah Marvel Cup, awarded by the Delaware State Chamber of Commerce for outstanding contributions to the community, in 1953, received honorary degrees from both Goucher College and the University of Delaware in 1955 and 1956 respectively, and was awarded by the New York Infirmary in 1957 the Elizabeth Blackwell Citation for distinguished contributions to medicine by women physicians. In 1963 she also received at Wesley College the Cannon Centennial Medal which was awarded to seven outstanding American women.

From 1921 to 1946 she was Chief of Pediatrics at the Delaware Hospital and served on the Delaware State Board of Health for 18 years.

Mr. President, I am delighted to have the honor of presenting to you on behalf of the Fellowship Committee and the Council of the College, Dr. Margaret I. Handy as Honorary Fellow.

FIG. 1. "Children's Doctor" by Andrew Wyeth. This tempera of Dr. Margaret Handy was painted by Mr. Wyeth in 1949.

"The artist's son Nicholas had been severely ill, and it was necessary for the doctor to drive out from her office for frequent house visits. On several occasions Dr. Margaret Handy would arrive at the house clearly showing the strain of a sleepless night—her car mud-spattered from country roads, but her attitude calm and her judgment keen. All was well while she was there, but then she would leave, often in the night, to visit another sick child." (Photograph and quotation courtesy of Brandywine River Museum, Chadds Ford, Pennsylvania.)

Fig. 2. Diploma in hand, Dr. Handy is escorted to dinner by Drs. I. W. Ginsburg, Katherine L. Esterly, of Wilmington, Delaware, and Joseph Stokes, Jr. (5 January 1972).

Presidential Report

By GEORGE I. BLUMSTEIN, M.D

In this my final report, I should like to express my gratitude to the Fellowship for the privilege and high honor they have accorded me by having me act as their chief executive officer during these past two and one-half years. I hope I have upheld every confidence and trust you placed in me. Yet as the term draws to a conclusion, it is with a certain amount of relief that I look forward to relinquishing these responsibilities and try to look back and assess what has been accomplished. It has been an exciting and thoroughly enjoyable experience, a real labor of love, despite the numerous demands made on one's time, to say nothing of the many delays and frustrations in launching new programs, something that is inherent in leading a venerable organization through these tumultuous and constantly changing times.

Whatever was accomplished during this term was truly a team effort and all due credit belongs to the chairmen of committees and their constituents, for they were the ones that did most of the spade work in seeking new and brighter vistas and preparing presentations for Council's consideration. Thanks should also be extended to our loyal employees who performed so admirably during these difficult times and helped effect the economies demanded by our stringent budget.

The major effort of this administration during the past year was to implement the charges given Council at its September 21, 1971 meeting. Essentially this was to clarify its functions, strengthen and update its structure, administration and programs and seek a broader base for community support. Despite a laborious effort to address ourselves to each of these problems, I am afraid that many are still in the drawing-board stage and will require additional planning before implementation is possible. However, it is possible to identify four solid accomplishments that were effected or approved during the past year.

The first of these was to establish a balanced budget. A year ago we were all shocked by the auditor's report of a substantial deficit, something that was unknown to us because of our poor accounting system. In order to get reliable financial data, it was necessary to revise our entire accounting system, something that was accomplished with the help of our auditors and a new comptroller. Once established, it permitted us to obtain accurate cost accounting figures for each operation and allowed us to revise our schedule of fees accordingly. It also supplied accurate data on which to project a realistic budget and periodic reviews to be sure we were living within the projections. As our financial report indicates, we met the mandates of Council to establish a balanced budget. For the first time we now have a satisfactory accounting system that can produce accurate, current and reliable financial figures for any segment of our operation on relatively short notice. The maintenance of such an operation is an absolute essential for our continued welfare, for without it we could easily drift towards a deficit without knowing it.

The second accomplishment was the revision of our Bylaws, modifying our requirements for Fellowship to include all types of medical scientists who are active in an allied health profession possessing advanced academic degrees. The first such candidate to be so honored was Mark Allam, V.M.D., Dean of the School of Veterinary Medicine of the University of Pennsylvania. This should go far in broadening our base for new members and permit us to double our

enrollment by 1980. Thought is also being given to establishing a junior-type membership for residents and recent graduates.

The third innovation was the organization of the Women's Committee and the formal recognition of their Bylaws by Council. In the short time they have been organized, they have added a new and exciting dimension to our social programs. We have high hopes for what this group can do for us in the future and look forward to their active participation in many of our programs.

The fourth item was the long delayed decision to establish a Fellowship Room. It required a poll of the membership to decide its fate, the returns favoring its establishment by better than a 4:1 ratio. You undoubtedly will be hearing more about its implementation in due time.

The Planning Committee considered numerous other activities, some of which received Council approval and await further action, while others are still in the stage of discussion. Since so much time and effort went into their formulation, it seems wise to record these deliberations for the record and indicate their present state of development.

First and foremost was the need for fund raising. This was not feasible without a planned program. Considerable time was spent on reviewing all the possible projects before selecting the most appropriate one. The one that was selected as the focus for fund raising was the need for additional library space that would include areas and facilities for new audio-visual aids and educational programs. The absence of clear projections or understanding regarding the future of regional libraries as well as the manner in which such materials will be stored or retrieved dictated that we proceed cautiously, hoping that these issues will be clarified as we implement our programs. In the interim, the S. Weir Mitchell Associates program continued to function and attract new candidates through individual solicitations as well as through development dinners. The wisdom of amalgamating all fund-raising efforts under a single committee was discussed without decision. Several other methods of increasing our endowment met with the committee's approval but were not presented to Council. These included a drive for life membership, a proposal that is almost ready for implementation, a program to obtain bequests through the use of letters of intent, and, finally, a tribute fund that might eventually become part and parcel of the activities of the Women's Committee.

The newer programs included a lecture series on "Preparing for Retirement." The project has received Council's blessings awaiting further reports by as yet an unappointed task force who were to prepare an outline of the subjects to be discussed and a list of speakers. A program of this type could bring the College much needed publicity and closer association with the larger corporations whose retiring executives might be enrolled in it. An ad hoc committee is presently preparing a report on the College's role in the matters pertaining to the delivery of medical services.

A closer alliance with our affiliate, the Greater Philadelphia Committee for the Medical Pharmaceutical Sciences, and other scientifically oriented institutions like the Franklin Institute and the Academy of Natural Sciences seemed desirable, and efforts are under way to effect a more meaningful association.

Finally, efforts were made to improve and up-date existing programs. Discussions were also held on the advisability of revising the wording of our functions from those cited in our original charter. The central issue here is the proper role of the College in an area that contains five medical schools, one school of osteopathy, two schools of dentistry, one school of veterinary medicine, two pharmacy schools, some of the largest insurance companies in the country and 70% of the pharmaceutical industry within a radius of 90 miles. Each of these health-ori-

ented agencies has developed and implemented its programs individually, a process that at times encouraged isolation, duplication of effort and perhaps unnecessary or even destructive competition. The College is in a unique position as an independent institution without vested interests to serve as the home base for all allied health sciences in this area and project for them an image that would reflect the entire constellation and be brighter than the sum of its individual components.

William Goodell, M.D., and the Preston Retreat[1]

By W. ROBERT PENMAN, A.B., M.D., M.S.[2]

ON November 18, 1971, the new Preston Building of Pennsylvania Hospital was dedicated; and, once again, the people of Philadelphia, and especially the pregnant women, benefitted from the Preston Trust created in 1835 by Doctor Jonas Preston, a Quaker physician, born in Chester, Pennsylvania, on January 25, 1764.

Preston's father had died when he was eight years of age. At the start of the Revolution, he and his mother moved to Wilmington, Delaware, where he studied medicine, with his preceptor being Doctor Nicholas Way,[3] the most eminent physician of that community. Preston completed his formal medical education at the University of the State of Pennsylvania, graduating in 1784. After a year spent in Europe visiting the clinics and hospitals in Edinburgh, London and Paris, he returned to the United States and established a successful practise in Chester. In 1794, he married Orpal Reese and was permitted to manage the Reese financial affairs, which he did successfully by clever investments in bank stock, an investment technique rarely used in those times.

Shortly after his 1794 marriage, he moved his wife and practise to Newtown (now Newtown Square in Delaware County) and became very active in public affairs, being elected a representative to the Pennsylvania State Legislature, first in the House and later in the Senate at a time when that body met in session in Lancaster. During this period, his first wife died; and, in 1812, he married Jane Thomas, who, in 1816, persuaded him to move to the city of Philadelphia, where he was immediately accepted by the professional and business community. In 1817, he was appointed to the City Council and was one of the leaders who promoted the enlargement of the construction of the Philadelphia Public Water Works. Shortly after this, he was elected a director of the Bank of Pennsylvania and also a director of the Schuylkill Navigation Company. He remained active in the Schuylkill organization until the time of his death and had extensive stock holdings in the company.

During Doctor Preston's years in Philadelphia, he observed, both as a physician and a business man, that the poor pregnant women of the city had little or no medical care during their pregnancies and no safe, clean place for their confinements. There were only two hospitals in the city: the Almshouse, or "Blockley" as it was known, now the Philadelphia General Hospital, and the Pennsylvania Hospital. Both of these institutions had deadly, recurrent epidemics of Child Bed Fever,[4] frequently severe enough to close the maternity wards for long periods of time. The wealthy women, of course, were not involved in this type of medical care; for their deliveries were managed in the privacy and cleanliness of their own homes; and, hence, childbed fever among this class was not a pressing problem.

In 1835, at the age of 71, Doctor Preston wrote his last will and testament. Since nei-

[1] Presented before the Obstetrical Society of Philadelphia, 2 December 1971, to commemorate the dedication of the new Preston Building of Pennsylvania Hospital on 18 November 1971.

[2] 20 State Road, Paoli, Pennsylvania 19301.

[3] One of the first graduates of the College of Philadelphia School of Medicine.

[4] Report of Standing Committee on Midwifery, The College of Physicians to Board of Trustees, Preston Retreat. Preston Retreat Papers, p. 8, Pennsylvania Hospital, Philadelphia, Pa.

ther of his wives bore him any children, it was his desire to leave the bulk of his estate to create a charity which would benefit the pregnant, deserving poor. His will states that "he wished to create a Lying-In Hospital in the City of Philadelphia for indigent married women of good character from the City and County of Philadelphia and the County of Delaware, distinct and unconnected with any other hospital, where these women may be received and provided with proper obstetric aid for their delivery, and with suitable attendence and comforts during the period of weakness and susceptibility which ensued, continuing ordinarily for about four weeks." For this specific purpose he bequeathed $250,000, which also included the money realized from the sale of lands of St. John's Church in Norristown, Montgomery County.[5] Jonas Preston died the next year, in 1836. The trustees, under Eli K. Price, immediately implemented the request as set forth in his will and created the Preston Retreat. The Trustees, being but a group of lay businessmen, were aware of their lack of knowledge in building a maternity hospital. They requested help from The College of Physicians in creating the Retreat. The College responded by creating a Standing Committee on Midwifery, with Doctor Charles Meigs[6] of Jefferson Medical College as chairman, and Doctors Ruan,[7] Huston,[8] and Gebhard[9] members.

The College of Physicians' Standing Committee on Midwifery thoroughly evaluated the obstetrical problems in Philadelphia from all aspects and made many recommendations to the trustees, the first of which was to suggest that Doctor James Bryan of Philadelphia be hired to go abroad and survey the maternity hospitals and the obstetrical customs of the British Isles and the Continent.[10] They advised that all of Doctor Bryan's expenses be paid and that he receive a salary of $500. The trustees concurred, and Doctor Bryan went to Great Britain, Ireland, France, Germany, and Italy, the trip taking fourteen months during the years 1838–39. Doctor Bryan sent continuing reports of his observations, findings, and clinical statistics to the trustees of the Preston and the Midwifery Committee. It was his impression that the best Lying-In Hospital, and the one with the best maternity record, was the City of London Lying-In Hospital on City Road. This Hospital, which had opened in 1773, had 50 beds and performed 400 deliveries per year, had had only one epidemic of childbed fever during its long, distinguished career. Dr. Bryan believed that this excellent record was due to its location on high, well-aired, and well-drained land, isolated from surrounding buildings, and an excellent free circulation of air within the building, and to scrupulous cleanliness of the hospital, nurses and attendants at all times.[10]

The Preston trustees conformed with stipulations of Doctor Preston's will that the hospital be located on some suitable place within the following limits: between the rivers Delaware and Schuylkill, and between Cedar and Coates Streets, continued to the Schuylkill.[11] They purchased eight acres of ground on August 1, 1836, at

[5] Minutes, Board of Trustees, Preston Retreat. Preston Retreat Papers, Pennsylvania Hospital, Philadelphia, Pa.

[6] Charles D. Meigs, M.D. (1792–1869) received his medical degree at the University of Pennsylvania in 1817 and went on to become Professor of Obstetrics and Diseases of Children at Jefferson Medical College, Philadelphia, Pa.

[7] John Ruan, M.D. (1771–1845) received his medical degree at Edinburgh, Scotland.

[8] Robert Huston, M.D. (1794–1864) received his medical degree at the University of Pennsylvania in 1825 and held Meig's position in 1838.

[9] Lewis Gebhard, M.D. (1791–1873) received his medical degree at the University of Pennsylvania in 1813.

[10] James Bryan, M.D. (1810–1881), born in Marthy, Wales, graduated from the University of Pennsylvania School of Medicine in 1834, published his report on the State of Lying-In Hospitals in Europe in 1845 in Philadelphia. He was cofounder of and the first president (1849) of the Medico-Chirurgical College of Philadelphia, Pa.

[11] Paper "A" of will of Jonas Preston, registered April 8, 1836. Preston Retreat papers.

Twentieth and Hamilton Streets for $37,000. Five architects were invited to submit plans for the new maternity building, even before any reports had been received from Doctor Bryan's trip abroad.

Isaac Holden, an English architect, with a fine Philadelphia reputation, submitted an excellent plan. He had already designed the Pennsylvania Hospital for the Insane at 44th and Market Streets. John D. Jones, William Kelly and Thomas S. Stewart also submitted plans for the proposed maternity building. But the Preston Board of Trustees on February 20, 1837, appointed Thomas U. Walter to be the architect.[12] Thomas U. Walter had received his apprentice training in the office of William Strickland[13] of Philadelphia and had already designed the Moyamensing Jail as well as the Girard College main building, which was acknowledged as an impressive form of Classic Greek Revival architecture. He submitted his plans on July 20, 1837, three days after the cornerstone was laid. The plans called for a compact, simple, three story structure with a full basement. In the front, it had clean simple lines with four severely plain Doric columns surrounding the portico. The main entrance consisted of a solid imposing wooden door. The roof was hipped, and had a large cupola in its center. If the Walter plan for the exterior facade is examined closely and compared with the Lying-in Hospital and Rotunda in Dublin, Ireland, it will be observed that there is a striking resemblance, reflecting the British influence of the time. The trustees and the Standing Committee on Midwifery of The College of Physicians accepted the Walter plans, and construction was started in 1838, even before Bryan started his trip abroad for the trustees.

Construction was immediately delayed because the marble from the Chester County quarries, "where it is required to be obtained," was in short supply.[14] The "Thomas Quarry" was located one half mile north of the Oakland Station of the Pennsylvania Railroad in West Whiteland Township.[15] The railroad spur upon which this marble was hauled was built for this express purpose by Doctor William Darlington of West Chester, Pa., president of the seven-year-old West Chester Railroad.

The Preston Retreat was completed in 1840 at a cost of $85,000, exceeding the calculations of the Board of Trustees by $30,000. Because of this large cost overrun and the severe business recession in 1840, the Retreat could not be opened. The monetary value of the Preston Trust decreased by one-half, mainly because of the decrease in value of the Schuylkill Navigation Company stock, brought about by the rapid introduction of steam railroads in the country. In an attempt to diversify their investments, the trustees, in 1843, made extensive land purchases in Schuylkill County, Pennsylvania. In 1846, with the financial picture still bleak, the Trustees donated the use of the Retreat, rent free, to the Foster Home Association of Philadelphia, and they occupied it for nineteen years from 1847 to 1865.

Coal was discovered on the Schuylkill Navigation Company land holdings in 1863 and was now in great demand with the advent of the steam railroads. Jay Cooke and Company purchased these coal lands from

[12] Thomas U. Walter (1804–1887), born in Philadelphia, also contributed to the design of the United States Capitol in Washington, D.C., and the City Hall in Philadelphia. *Appleton Cyclopedia of American Biography*, vol. VI, p. 341. The original drawings are in the possession of Pennsylvania Hospital.

[13] William Strickland (1787–1854), born in Philadelphia, Pa., studied under Benjamin Latrobe. He built and designed the United States Bank and the United States Mint in Philadelphia. *Appleton Cyclopedia of American Biography*, vol. v, p. 719.

[14] A sample of this marble may still be seen at the National Bank of Chester County (now the Southeastern National Bank), 23 South High Street, West Chester, Pa.

[15] The quarry is still present, but is now used as a private swim club. Personal conversation, Wm. McIlvaine, Whitford, Pa.

FIG. 1. The drawing by Thomas U. Walter of the front elevation of the Preston Retreat, 1838. Photograph by Herbert Wilf, PH.D., Department of Mathematics, University of Pennsylvania, courtesy of Pennsylvania Hospital.

the Retreat for $290,000, and the Trustees also sold 25,000 shares of the Schuylkill Navigation Company stock for one dollar per share.

The trust, then, had cash reserves of $362,609 in 1863, and the trustees felt that they were then in a position to open the Retreat. The Retreat was furnished at a cost of $25,000 and was opened in 1865, under the direction and guidance of Doctor William Goodell, late "general practitioner" of West Chester, Chester County, Pa., appointed as the first resident director of the Preston Retreat by the Board of Trustees, on May 15, 1865.

Doctor Goodell was born in Malta, October 17, 1829, the son of New England missionary parents. He was reared in Constantinople and educated in the United States. There is some indirect evidence that he obtained his early secondary education at the old Bolmar Academy in West Chester, Pa. His college education was obtained at Williams College, where he was elected to Phi Beta Kappa in 1851. In 1854 he was graduated from Jefferson Medical College in Philadelphia and considered establishing a medical practice in nearby Mt. Holly, New Jersey.[16] However, he went back to Malta,

[16] West Chester State College Collection of William Goodell letters. Letter dated September 4, 1854 to Dr. B. H. Stratton, Mount Holly, N.J., written by Dr. Wilmer Worthington, West Chester, Pa.

his birthplace, and practised there for one year. He then moved to Constantinople, where he practised until 1860. In 1857 he was married to Caroline Darlington Bell, the daughter of Judge Thomas S. Bell of West Chester, Pa. Their marriage ceremony was conducted on the ship "The Henry Hill" in the harbor of Smyrna, Turkey, because of anti-American feeling then present in Smyrna and the desire not to be married on Turkish soil but on United States property.

In 1860 the Goodells came to the United States at the behest of Judge Bell, who was in ill health and lonesome after the death of Mrs. Bell. On arriving in the United States, Doctor Goodell considered living in New York City and establishing a medical practise there.[17] However, the Goodells found Judge Bell's health so poor that they moved to West Chester, Pa., to be near the Judge and to take care of him. Doctor Goodell engaged in the general practise of medicine in West Chester and became active in the Chester County Medical Society, shortly after his arrival becoming its treasurer. He was active in medical affairs, took the initiative in establishing medical society fee schedules, worked for the Sanitary Commission and lent out his rented medical office as a meeting place for the medical society.[18] During the Civil War, he was the Acting Surgeon of Camp Paoli for paroled prisoners of the United States Army situated just south of West Chester on property now occupied by West Chester State College.[19] Shortly after the Goodells arrived in West Chester, Judge Bell died and left a very small estate. Unfortunately, Doctor Goodell's practise in West Chester for four years produced a poor monetary return for his medical efforts so that now he was prepared to move west to Kansas to earn a better living for his family when his appointment as the first physician-in-charge of the Preston Retreat was made.[20] This appointment was arranged by Judge William Butler, United States District Judge in Philadelphia. Judge Butler was a close personal friend of old Judge Thomas Bell of West Chester, Pa.

To further prepare Doctor Goodell for the administration and management of the Preston Retreat, the Board of Trustees, in August, 1865, sent him to New York and New England to visit lying-in charities in that area, especially the New York Lying-In, the first maternity hospital in the United States.

Doctor Goodell formally opened the Preston Retreat for patient care on January 1, 1866, and the first patient was admitted on February 6, 1866, and delivered on February 9, 1866. The Retreat slowly and gradually became successful, delivering about 100 patients per year, a number which rose to approximately 200 per year. The Preston, at this time, consisted of four wards, each containing five beds. The wards were used in rotation, with one ward always closed down for thorough cleaning and airing, for a two to three week period. One nurse was assigned to each ward. The nurse wore clothing that could be readily washed and the nurse was instructed to take a full soap bath every day. When the nurse's ward was closed down for cleaning and airing, the nurse, too, was given one full week off for rest before being assigned to another ward.

The ventilation system at the Retreat was unique and was created by Doctor

[17] West Chester State College Collection of William Goodell letters. Letter dated October 15, 1860, West Chester, Pa., written by Dr. Wilmer Worthington to Dr. J. D. Griscom, New York City.

[18] Minutes of Chester County Medical Society, Library of Chester County Historical Society, West Chester, Pa.

[19] William Goodell Papers, Library, West Chester State College, West Chester, Pa.

[20] Hirst, B. C.: In Memoriam. Transactions American Gynecological Society, 20, p. 539, 1895.

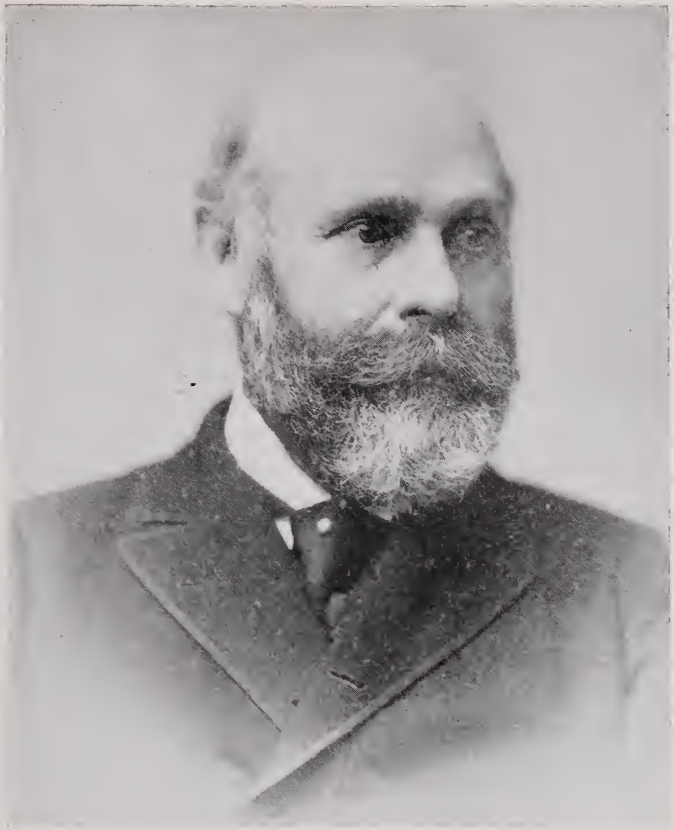

FIG. 2. William Goodell, M.D. Sturgis Collection, The College of Physicians of Philadelphia.

Goodell.[21] Fresh cold air was brought in through the basement where it was heated upon being passed around large steam chests with large radiating surfaces and then conveyed by ducts to the wards. The cold and "foul" air escaped through a large, old-fashioned fireplace in the center of the wards in which a gas jet was kept lighted to heat the "foul" air, thus maintaining an adequate draught up the chimney for its escape. In summer, the admission of fresh, pure air depended solely on the open doors and windows and the draught created by the lighted gas jet in the fireplace.

[21] William Goodell: The Means Employed at the Preston Retreat for the Prevention and Treatment of Puerperal Diseases. Obstetrical Journal of Great Britain and Ireland, American Supplement, 1874, July–August.

The patients admitted to the Preston Retreat were white, married, and from the poorest classes from the City and County of Philadelphia and the County of Delaware. Their stay at the Retreat averaged approximately 34 days, with 16 days being spent before delivery and 18 days being spent there after delivery. On admission, every patient was given a bath and then issued clean clothing. Thereafter, two baths per week were mandatory. If the patients were weak and in poor health, they were rested, fed excellent food and were given quinine and a mixture of muriated tincture of iron and dilute phosphoric acid. Constipation was managed by pulverized glycyrrhiza compound of the Prussian Pharmacopiea and Lady Webster's pills. Stubborn and resistant cases of constipation were admirably

managed with pulverized Jalopas compound. Headache and sleeplessness were treated with potassium bromide.

When labor ensued, the patient was always given an enema, and then a warm bath, after which the membranes were ruptured artificially. The second stage of labor was never permitted to linger, in order to preserve the strength of these poor women. The delivery would be consummated with the double outlet forceps or the single forceps known as the Vectis, if a spontaneous termination did not occur. The placental delivery was always managed by the Crede Method. Ergot was rarely used as a stimulant during labor, but one teaspoonful of the Fluid Extract of Ergot was administered orally as soon as the fetal head pressed upon the perineum. The perineum was examined immediately after delivery and lacerations were repaired with silver sutures. Immediately postpartum, the patients were fully bathed and an abdominal binder was applied to help keep the uterus firm. The bed upon which the patient delivered was wheeled from the delivery room to a ward and the patient was transferred to her ward bed. The patient was then given a mug of hot beef tea made from Liebig's extract, after which the child was put to the breast. The patients were placed on a full and nutritious diet and were ambulated in 24 hours with the complete removal of the abdominal binder at that time.

The immediate post-delivery use of the belly band on the infant, then routinely used in the United States, was eliminated.[22] Goodell credited this with his record of fewer umbilical infections and fewer umbilical hernias.

After-pains, when present, were managed with quarter grain doses of morphine every hour until relief was obtained.[23] In stubborn cases, 10 grains of quinine were given every six hours until relief occurred or the ears began to ring. Bed pans were not used; every woman was encouraged to get out of bed and use the commode. Baths were taken every day by the patients and carbolic acid soap was used. Foul, fetid, lochial discharge, when present, was managed with potassium permanganate vaginal douches. Persistent post-partum fevers were managed with quinine 6–10 grain doses every four hours or until the ears rang.

Goodell was to become evangelistic on the subject of a bathroom and toilet facilities within the interior of the American home.[24]

The early ambulation practised at the Preston Retreat was based on Doctor Goodell's early experiences and observations among the Oriental woman in Constantinople, who got up, moved about, and worked with impunity a few hours after their delivery. Doctor Goodell strongly felt that pregnancy, labor and delivery were a physiological process and should not be associated with a disease state, nor treated as such.

All spontaneous labors and deliveries were achieved without any anesthesia; however, ether anesthesia was used for deliveries effected by the forceps or vectis.

On only one occasion was the Retreat closed because of infection, and that was for two weeks starting on October 14, 1876, when two patients died of puerperal sepsis and one nurse was stricken with malignant erysipelas.

Doctor Goodell was the first physician to apply the doctrine of antisepsis and asepsis to institutional obstetric practise, thus proving that a large number of patients could be delivered safely at public institutions

[22] Interestingly enough, in October of 1865, Dr. Goodell was slated to run a program for the Chester County Medical Society on his own proposal to eliminate the usual binders in pregnancy. He left before he could run the program for the Society.

[23] This large dose of morphine, by present standards attests to the weakness and impurity of the drugs used in this period.

[24] Goodell, W.: *Lessons in Gynecology*. D. G. Brinton, 115 S. 7th Street, Philadelphia, Pa., 1879.

with adequate nursing and professional care being available.[25]

Doctor Goodell was the director of the Preston Retreat for 22 years. He resigned in 1887, after having delivered 2,444 women and having only six deaths in that period of time. His average salary as director of the Preston Retreat varied between $8,000 and $12,000 per year.[26] In 1870 Doctor Goodell was appointed a Lecturer on Obstetric Diseases of Women at the University of Pennsylvania; and, in 1874, he was appointed Clinical Professor of Disease of Women and Children, a post he held until his death on October 27, 1894, from a brain tumor.

The Trust of Doctor Jonas Preston, created in 1835, which developed and built the second lying-in hospital in the United States, which opened its doors to serve the pregnant woman of the community of Philadelphia in 1866, has again contributed to the creation and construction of still another maternity unit, the Preston Building of Pennsylvania Hospital, dedicated on November 18, 1971, a continuing tribute to that Quaker physician from Chester, Pennsylvania.

[25] This was based on Garrigue's work and experiences at the New York Maternity Hospital. Kelly, H. and Burrage, W.: *American Medical Biographies.* Overman Remington Co., Baltimore, 1920, p. 428.

[26] Minutes, Board of Trustees Preston Retreat, Preston Retreat Papers, Pennsylvania Hospital, Philadelphia, Pa.

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J. Edwards Lee, M.D., and the Founding of the Wisconsin State Hospital

By ROBERT F. KRAUS, M.D.*

THE year 1844, which marked the founding of the Association of Medical Superintendents of American Institutions for the Insane,[1] today known as the American Psychiatric Association, was a pivotal year in the history of the treatment of the mentally ill in America. In the first decades of the nineteenth century, the plight of those suffering from mental disorders had become a matter of increasing humanitarian concern. For many years the insane had been included among those admitted to almshouses. In the larger cities the infirmaries of these institutions tended gradually to develop into municipal hospitals while the mentally sick became segregated into "lunatic asylums." In these city asylums and in the few state institutions then existing there prevailed a standard of care which was at best custodial. The heads of the institutions tended to function as wardens and in many cases did not possess a minimum of medical training. Population increases and rising public concern prompted reforms in the 1820s and nearly all states began the construction of almshouses, but the lack of adequate standard and personnel resulted in these almshouses becoming simply catch-alls for all sorts of destitute unfortunates. In the few institutions where better conditions prevailed, the efforts of the medical superintendent were often the determining factor. It was within this context of reform and public interest that thirteen leaders in American psychiatry, all superintendents of outstanding mental hospitals, founded the Association, which had for its purpose a concerted effort for the improvement on the national level of mental hospital organization, administration and care. One of these original thirteen was Dr. Thomas Kirkbride, a nationally prominent physician who was the first secretary of the Association, and later its president, and who was for many years the superintendent of the Pennsylvania Hospital in Philadelphia. The first gathering of the group took place on October 15, 1844, at his home on the hospital grounds. This and subsequent meetings resulted in vigorous and enlightened recommendations concerning such matters as standards of construction, organization and care, the qualifications of superintendents, and freedom from financial and political interference. These recommendations received widespread notice and had a continuing impact on the national scene.[2]

It is difficult over a century later to apprehend the flavor of those times and the multiple factors—cultural, political and personal—which opposed the implementation of constructive change. An opportunity to examine some correspondence between Dr. Kirkbride and Dr. J. Edwards Lee, a Philadelphia physician who traveled to Wisconsin in 1857, where he assisted in the organization of the Wisconsin State Hospital, was appointed as its first superintendent in 1859, and was replaced in 1860, brings these factors into sharp focus. The Thomas S. Kirkbride Letters,[3] some five

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[1] Hereafter referred to as the Association.

[2] Noyes, A. P.: *History of Psychiatry*. Privately published, Philadelphia, 1960, Chapter 9, pp. 1–2.

[3] The Thomas S. Kirkbride Letters, 1840–1883, The Institute of the Pennsylvania Hospital, Philadelphia. The Lee-Kirkbride Letters, fourteen in number, written between May 10, 1854 and October 16, 1862, are included in this collection. Ten of these letters, written between May 4, 1859 and December 10, 1860 have direct reference to Dr. Lee's affairs in Madison.

thousand in number, represent communications from various sources received by Kirkbride during his tenure as superintendent of the Pennsylvania Hospital. The letters have been reviewed by Farr[4] and were recently the subject of a more intensive study by Jones.[5] Kirkbride (1808–83), as has been noted, was a figure of the first eminence in American psychiatry, a man in whom an inquiring mind, a capacity for vigorous leadership and a talent for teaching combined to exert an impact on psychiatric thought which continues to this day. His special interest was in the field of hospital organization and construction, his ideas in this area being embodied in many buildings which are still in use.[6] From its earliest days, the Pennsylvania Hospital under Kirkbride trained many young men who were later to become prominent in the field; perhaps no other American hospital has produced so many distinguished leaders.[7]

Dr. Lee was assistant physician to Kirkbride in this setting for some five years prior to his trip to Madison. Of Lee himself, relatively little is known. It appears that he was an excellently trained and qualified physician. Kirkbride evidently relied on him heavily and was in the habit of leaving him in charge of the hospital when away.[8] The reports of the Wisconsin State Hospital[9] repeatedly refer to him in laudatory terms. The tenor of his letters of recommendation for the post of superintendent[10] suggest a man of excellent reputation. Of the three recommendations, one was signed by Kirkbride and the others by C. H. Nichols[11] and D. Tilden Brown,[12] both of whom enjoyed national prominence as superintendents. Lee's short career in Madison, as revealed in his letters to Kirkbride during that period, provides a sobering example of the pitfalls and obstacles that stand in the way of those who are in the vanguard of campaigns for social change. It is the purpose of this paper to review and discuss the Lee-Kirkbride correspondence, together with related historical material, in an attempt to reconstruct in part the events of the decade which encompassed the founding of the Wisconsin State Hospital. The history of the founding of this hospital gives not only a glimpse of the turbulent frontier political scene, but also a picture of the professional life of a prominent Wisconsin psychiatrist circa 1860.

Chronology of Events

Early in the 1850s the legislation of the newly admitted State of Wisconsin appointed Building Commissioners to undertake the establishment of a "State Lunatic Asylum." A delegation traveled to the east in order to visit well known institutions and consult with leading experts in the field of hospital organization and construction.[13] Kirkbride evidently played a prominent advisory role. He was quoted extensively in the *Report of the Commissioners*[14] and mentioned again in the conclusion, along with Drs. Luther Bell and

[4] Farr, C. B.: Review of Letters Received by Dr. Thomas S. Kirkbride, 1840–1883. Bulletin of the Isaac Ray Medical Library, Vol. 2, No. 4, October, 1954, pp. 161–171.

[5] Jones, R. E.: Correspondence of the A.P.A. Founders. American Journal of Psychiatry, Vol. 119, No. 12, 1863, pp. 1121–1134.

[6] Bond, E. D.: *Dr. Kirkbride and his Mental Hospital.* Lippincott, Philadelphia, 1947.

[7] See Noyes, *op. cit.*, ch. 5, pp. 4–10, for further biographical data on Kirkbride.

[8] Lee to Kirkbride, The Thomas S. Kirkbride Letters, May 10 and May 11, 1854 and October 16, 1862.

[9] *The Reports of the Trustees and Building Commissioners of the Wisconsin State Hospital for the Insane,* unnumbered volume, Wisconsin State Historical Society, Madison. Hereafter referred to as *Reports.*

[10] *Reports,* Appendix to the Report of the Trustees, 1859.

[11] Noyes, ch. 13, pp. 1–2.

[12] *Ibid.*, ch. 9, p. 5.

[13] *Reports,* Report of the Commissioners of the Wisconsin State Lunatic Asylum for the year 1854

[14] *Ibid.*, p. 4.

C. H. Nichols,[15] both prominent in the Association. Reproduced in full were twenty-six propositions relevant to hospital construction adopted by the Association at their meeting in 1851.[16] Kirkbride had reviewed and commented upon the organizational plan for the hospital even before it was presented to the legislature.[17] Unfortunately, after initial legislative approval of the plan, contracts were let and appointments were made in a manner so irregular as to provoke a storm of criticism, which resulted in the legislation being repealed. New legislation, which changed the name to "Wisconsin State Hospital" and designated new commissioners, was enacted in March of 1857, but the hostility and suspicion engendered by the scandals of 1854 were to be a continuing problem.

It was sometime in 1857 that Lee arrived in Wisconsin. He placed himself at the disposal of the commissioners, in an advisory capacity without pay, until his appointment in June of 1859. The years from 1857 to 1860 were stormy ones for the hospital. Continued legislative harassment finally resulted in an amendment which brought in a new Board of Trustees early in 1860. Lee was quickly replaced by this Board in a rather summary manner. From the content of Lee's letters, which throws light on each phase of this chronology, it seems quite clear that he came to Madison with the encouragement and recommendation of Kirkbride and other leaders specifically to obtain the position of superintendent. He mentions his financial indebtedness to Kirkbride,[18] and since there is no mention of his practicing in Wisconsin, Kirkbride may have financed his trip so that he could devote himself exclusively to the attainment of the position. Lee was a well-trained man personally selected and perhaps financially supported by leaders of the Association to compete for a position of responsibility. This was in accord with the Association's announced objectives of professionalizing the role of the superintendent and improving the calibre of hospital organization and care in general. His contribution to the development of medical care in Wisconsin was of the first order. Unfortunately, this polished Eastern professional was unable to survive in the rough and tumble of frontier politics.

[15] *Reports,* Report of the Commissioners of the Wisconsin State Lunatic Asylum for the year 1854, p. 19.

[16] *Ibid.,* p. 6.

[17] Lee to Kirkbride, April 30, 1860.

[18] Lee to Kirkbride, October 18, 1858 and June 23, 1859.

Lee's Career in Madison

The thousand-mile trip from Philadelphia to Madison carried Lee from the established, conservative East to a new and buoyant frontier. Horace Greeley had visited the city in 1855 and stated that "Madison is growing very fast.... She has a glorious career before her."[19] A Madison paper of April 11, 1855, editorialized as follows:

> "Never before was the building mania in Madison more apparent than now. Go where you will—visit which ever part of town you may—and you can see on all sides—in every nook and corner—apparently on every lot, the most active, busy bustle of preparations for building. You pass an untouched, vacant lot in the morning and at night you will find it strewn over with building materials...."[20]

The decade following the admission of Wisconsin to the Union in 1848 was to see the city build the State Capitol and the University of Wisconsin, in addition to the State Hospital, in an attempt to assure its status as capitol city.[21] Lee commented humorously on the rigor of the Wisconsin winter, which froze his mercury thermometer and left snow on the ground into late spring, but expressed enthusiasm about his prospects in this "new and wild country."[22]

[19] Quoted in Durrie, D. S., *A History of Madison,* Atwood and Culver, Madison, 1874, p. 245.

[20] Quoted in Durrie, p. 248.

[21] Durrie, pp. 244–284.

[22] Lee to Kirkbride, May 4, 1859.

From the time of his arrival Lee involved himself in the affairs of the hospital. His services and expert advice were given freely and without charge to the Commissioners, and were evidently highly valued, judging from subsequent reports, e.g., the following:

"The Commissioners take occasion to say here, that they are largely indebted to Dr. J. Edwards Lee, formerly assistant physician in the Utica Insane Asylum of N. Y., and afterwards for several years, acting in the same capacity in the Pennsylvania Hospital for the Insane at Philadelphia, for many valuable suggestions and much important information in relation to the construction and management of institutions of this kind. Dr. Lee is now a resident of our State at Sextonville, Richland Co., near Madison and the Board have great satisfaction in speaking of his uniform gentlemanly deportment, and the thorough knowledge that he possesses in the treatment of the unfortunate Insane." [23]

The progress of construction, however, was marked by delay and frustration. Careful sounding of such men as the president of the building commissioners, a Mr. Sterling, left Lee with the impression that his prospects for appointment as superintendent were encouraging, but it seemed apparent that nothing was about to happen in the immediate future. Accordingly, he elected to return to the Pennsylvania Hospital during the winter of 1858–59 in order to study with Kirkbride, increase his knowledge concerning some problems he had encountered thus far, and hopefully thereby to enhance his chances of obtaining the position when it became available.[24]

Upon his return in May of 1859 he found the Commissioners in an "embarrassing position." The contractor had defaulted and the building was not under roof. A promise had been made to have the hospital ready for patients by January of 1860, and the Commissioners were making every effort to keep the work going. Lee felt them to be "excellent men of the right stamp . . . faithful in the discharge of their trust" but, unfortunately, "wedded to the error of overexpenditure." He presented his reasons for so feeling in a long and meticulously detailed survey of the problem in which every aspect of the construction of the hospital from the composition of the roof to the placement of pumps and cisterns was carefully discussed. His familiarity with the situation made him, he felt, the logical choice of superintendent.[25]

Recognition and reward for his long labors was soon forthcoming. The *Report of the Trustees and Building Commissioners* for 1859 recorded his appointment as superintendent and acknowledged the value of his contributions.

". . . We become convinced that it was poor economy to proceed farther with the work, unless we could avail ourselves of the services of someone familiar with the details of construction and fitting up peculiar to institutions of this character and we, accordingly appointed . . . J. Edwards Lee . . . who . . . by his advice and oversight has rendered important assistance. . . ." [26]

"The Commissioners wish again to acknowledge the great aid they have received from Dr. Lee . . . who has given them fully the benefit of his abilities and experience and has assisted them greatly. . . ." [27]

On the day following his appointment Lee wrote a letter which, more than any other, gives insight into his character and the nature of his relationship to Kirkbride.

". . . the Trustees have 'for better or for worse' selected your former assistant as their Supt., for the success which has attended by application I feel that I am indebted to the complimentary testimonials which yourself with others were so kind as to present in my behalf, and it is my just duty and pleasure to return my renewed thanks for this kindness which you showed me in this instance as you have a thousand others. It is needless to say that since I feel the responsibilities of the institution actually resting upon me an anxiety to meet in full the expectations which are formed of me and to honor in every particular your generous recommen-

[23] *Reports,* Report of the Building Commissioners for the year 1857.

[24] Lee to Kirkbride, September 26, 1858 and October 18, 1858.

[25] Lee to Kirkbride, May 26, 1859.

[26] *Reports,* Report of the Trustees, 1859, p. 5.

[27] *Ibid.,* Report of the Commissioners, 1859, p. 35.

dation is the predominant thought in my mind . . . I have doubtless much yet to learn before I shall realize the full meaning of that word *responsibility*. . . . I shall long for a counselor wiser than myself and wish that such a friend as it has been my privilege to be so long associated with could stand by my side. . . . I trust that there may never be wanting the satisfaction of feeling that I have been faithful to the trust. . . ." [28]

He went on to mention that the process of election had been a stormy one. Of the other nine candidates only one could claim experience but all had brought political pressures to bear which made the situation difficult for the trustees. His selection was evidently the occasion of hard feelings among some of the unsuccessful applicants. He mentioned also that some eight or nine months would elapse before he would receive any pay.[29]

Lee was to retain his position for less than a year, too short a time, unfortunately, for him really to discharge the obligation which he felt so keenly. He did not write Kirkbride again until the next spring, but his papers[30] give some hint as to his activities. He busied himself with matters relating to the completion of the hospital and readying it for occupancy, corresponded with various tradesmen, kept a daybook which was a careful record of hospital business affairs, and evidently followed the activities of the legislature closely. It was apparent to him from happenings in the legislature that winter that trouble was brewing. In a long letter to Kirkbride, he summarized the situation. After referring to the fact that the hospital was not open on January 1, 1860, as scheduled, he went on to say:

". . . The legislature met early in January and at once began to exhibit a feeling of hostility toward the institution. . . . The cause dates back to the old "Lunatic Asylum" contract of '54 when the . . . hospital . . . became involved in the vortex politics out of which I am fearful it will be a long time before it can be rescued. . . . The result was the annulling of the contract. . . . The 'Lunatic Asylum Swindle' was the watchword. . . . On the strength of this argument the State passed into the hands of the Republican Party . . . New Commissioners were appointed in '57 who have erected the present building. . . . When the legislature met this Winter they found the hospital incomplete and . . . a debt . . . contracted . . . more money was needed . . . an expense . . . the dominant party was afraid to shoulder and hence the solution to condemn and sacrifice the Commissioners. . . . Added to this was a prejudice on the part of some leading politicians in the Senate because a favorite of theirs had not received the appointment of Superintendent so that it was early evident that this poor hospital would be roughly handled . . . committees made unreasonably unjust reports censuring severely the Commissioners. . . . As I had become somewhat identified with the past . . . a slight share of abuse fell to my lot also. Prejudiced, unreasonable, mad and self sufficient as only a Western Legislative can be, it was impossible to turn the current, chiefly because the party leaders had decided that the cause that they were pressing was a political necessity." [31]

A new bill was passed which swept out the trustees and building commissioners for the second time in the hospital's short history, and fifteen new trustees, many of them political appointees, were designated. Some were friends of Lee but he doubted that their "weight of character would be sufficient to exercise a controlling influence." This board began to meet regularly, and Lee felt some foreboding about the fact that he was not apprised of their doings or recommendations. One prominent member of the board was a senator who had made openly hostile speeches about him, and Lee was in doubt as to the future.[32]

On April 10, 1860, he was called upon to report to the trustees rather suddenly. In a report[33] written the next day he apologized

[28] Lee to Kirkbride, June 23, 1859.

[29] *Ibid.*

[30] The J. Edwards Lee Papers, State Historical Society of Wisconsin, Madison. These are mss. relating to Lee's tenure as Superintendent, consisting of business letters, the daybook, a list of legislators and their voting on an issue, a report to the trustees, etc.

[31] Lee to Kirkbride, April 30, 1860.

[32] *Ibid.*

[33] Report to the Trustees, April 11, 1860, The J. Edwards Lee Papers.

for his unpreparedness but stated somewhat pointedly that since he had not received adequate notification it could not have been otherwise. He reviewed in detail all aspects of the hospital's status (mentioning in passing that, as yet, no appropriation had been made for his salary) and reported that sufficient progress had been made to plan "for opening the doors ... six weeks from the present time."

Ironically, the new board which had borne so little of the pressures of the previous three years was to reap the rewards. Their report stated:

"...We now present the institution before you, in a condition of health and promise, gratifying to ourselves—regarding it as already a success which the people of Wisconsin may contemplate with pride and pleasure." [34]

Reading on a few pages, we find that on May 22, 1860, Dr. John P. Clement was appointed to the office of superintendent.[35] Of Lee there is no mention.

It is evident, however, that his chagrin and disappointment were bitter.

"The result which I feared is now brought about.... Not a shadow of a charge of any kind was brought against me and some of those who voted against me openly conceded my fitness for the position and the injustice of this course but I thought that they were bound by the action of the legislature. The Blow is a heavy and staggering one and my way seems quite hedged up." [36]

"...The Board in glaring inconsistency with their action of electing a substitute, passed the following resolution, 'resolved in the election of a superintendent ... we are activated by no want of confidence in Dr. Lee and that we cheerfully concede him his ability and peculiar fitness for the post he has occupied.... A gentlemen of integrity, irreproachable moral character, etc., etc.'... perhaps it may lighten a little the heavy blow which this body of men has inflicted against my reputation.... The members of the legislature took prejudices home with them against me as being responsible for the acts of the commissioners as their adviser. It seems that during the last session the commissioners to lessen the (illegible word) which was thrown upon them made me the scapegoat. They exonerated me from this charge too late now.... I have great faith that the (illegible word) is ordered for the best though everything now looks very dark and uncertain before me. ... This ... committee is composed of politicians; They receive pay for their service and are not unwilling to use their positions ... for the purpose of self aggrandizement.... Our unfortunate Institute has stormy days before it I am fearful." [37]

Humiliated, despondent, and without definite plans, Lee left Wisconsin and spent several indecisive months with relatives in Illinois. Finally, in response to an invitation from Kirkbride, he returned to Philadelphia and again took an assistant's position at the Pennsylvania Hospital. His lasting concern seemed to be that he had never been given the opportunity to see his work come to fruition.[38, 39, 40]

The vested interests, animosities, and counterforces which confront those entrusted with responsibility for social change are formidable. For Lee they were insurmountable and led to failure and humiliation. Lee, the idealistic physician, seemed unable to come to grips with the inconsistency of officials who included in their report and plans the list of recommendations of the Association[41] with its specific injunctions against political chicanery, dilatory financial policy, and interference by nonqualified persons with the duties of the superintendent, only to ignore these recommendations in their subsequent behavior. However, the bitterness evident in the letters quoted above seemed to dissipate quickly. We do know that Lee came finally to view his experience as educative. As he put it, "I have learned some valuable lessons." [42]

[34] *Reports,* Report of the Board of Trustees, 1860, p. 3.

[35] *Ibid.* p. 6. Dr. Clement arranged for the admission of the first patients several weeks later.

[36] Lee to Kirkbride, May 24, 1860.

[37] Lee to Kirkbride, May 28, 1860.

[38] Lee to Kirkbride, November 24, 1860.

[39] Lee to Kirkbride, December 10, 1860.

[40] Lee to Kirkbride, October 16, 1862.

[41] *Reports,* Report of the Commissioners of the Wisconsin State Lunatic Asylum, 1854, p. 6.

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Dr. Peter Pineo (1825–91): Cape Cod Surgeon[1]

By FRED B. ROGERS, M.D.[2]

EMERSON once said that "all history resolves itself . . . into the biography of a few stout and earnest persons." Dr. Peter Pineo, who spent seventeen years in practice on Cape Cod, was such a person in American medical history. He witnessed, while a Harvard medical student, the first public demonstration of ether anesthesia at the Massachusetts General Hospital and later did outstanding professional service in the Union Army during the Civil War. His illustrious grandson, Dr. Peter Pineo Chase (1878–1956), of Providence, Rhode Island, recalled (1) late in life, "I spent my early years in the house of my grandfather, a surgeon on Cape Cod in the 'one-hoss shay' days of Dr. Oliver Wendell Holmes. Fortunately, even in those days, the railroad made it easy for him to mingle with the learned men of Boston: anatomists, physiologists, physicians and surgeons. At least I was started right."

Peter Pineo, junior, son of Peter and Sarah (Steadman) Pineo, was born on March 6, 1825, at Cornwallis, Nova Scotia, Canada. Of Huguenot descent, he was a grandson of John Pineo, who had been an orderly to General George Washington during the American Revolution. John later became a Congregational clergyman, in charge of the church at Cornwallis (2). His grandson Peter, at age seventeen, was apprenticed there to Dr. Charles C. Hamilton, who had graduated from the medical school of the University of Pennsylvania in 1834. After four years' preceptorship, the pupil continued his studies at the Harvard Medical School. He was among those present at the dramatic exposition of painless surgery in the dome amphitheater of the Massachusetts General Hospital on October 16, 1846.

Leaving Boston the following year, Pineo transferred to the Medical School of Maine, where he spent the February–May term and received an M.D. degree in 1847. His manuscript doctoral thesis, now in the Bowdoin College Library, had as its topic, *Cynanche Trachealis.*

Dr. Pineo began medical practice in Portland, Maine, but subsequently moved to Cape Cod in 1850 (3). In that year he succeeded Dr. Samuel Jackson in practice at Barnstable and was elected a Fellow of the Massachusetts Medical Society (4). On May 8, 1850, Peter Pineo married Elizabeth, daughter of Kendall and Betsey (Hill) Crosby, of Boston. A daughter, Maude, was later born to them.

After three years at Barnstable, Pineo relocated at Groton, Massachusetts, where he practiced until 1859. He then accepted the professorship of clinical medicine and medical jurisprudence at the Castleton Medical College in Vermont, a chair which he held until the outbreak of the Civil War. In June 1861, he was commissioned surgeon of the Ninth Regiment Massachusetts Volunteer Infantry, and two months later was appointed a brigade surgeon with the rank of Major in the United States Army Volunteers (5).

During four years of military service, Surgeon Pineo served on the staffs successively of Generals James S. Wadsworth and Rufus King, and was General Irwin McDowell's medical director during the second battle of Bull Run. He also was on the staff of General George G. Meade, as medical director

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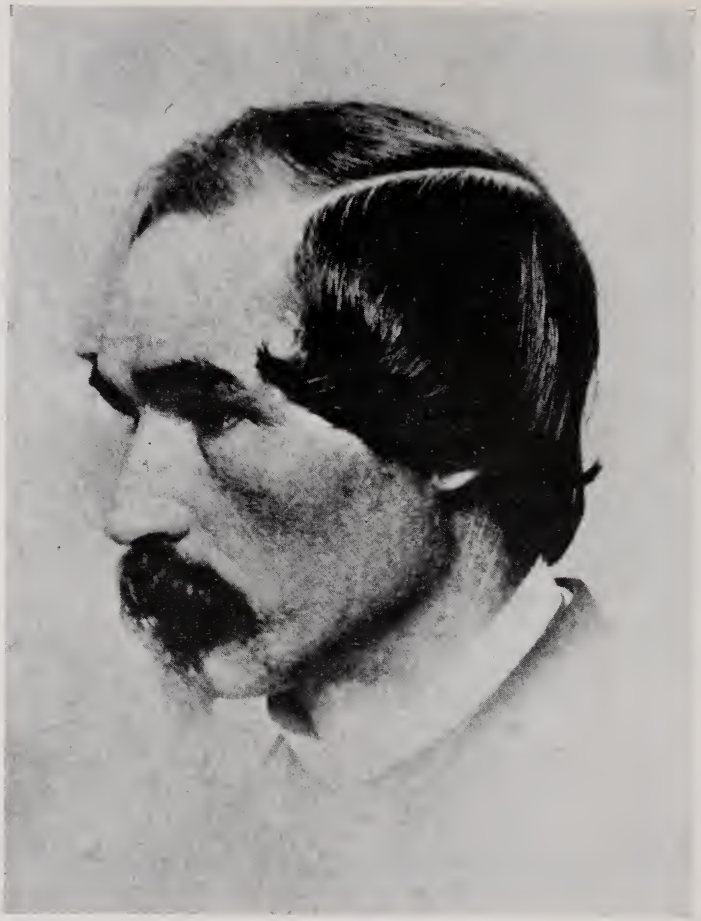

Fig. 1. Photograph of Dr. Peter Pineo in his younger middle years. Courtesy of the National Library of Medicine, Bethesda, Md.

of the First Army Corps at the battles of Antietam and South Mountain. In November 1862, Pineo was ordered to Washington, D.C., assuming command of the 600-bed Douglass General Hospital, and in March 1863, was promoted to Lieutenant Colonel. Under command of General Nathaniel P. Banks, he was next assigned as inspector for army hospitals along the Atlantic and Gulf coasts and toured these stations during the subsequent two years. At the war's end, he attended professionally Jefferson Davis during the latter's confinement in Fortress Monroe, Virginia.

Early in 1866, shortly after leaving the Army, Pineo took charge of the U.S. Marine Hospital Service of Barnstable County, Massachusetts, based at Hyannis. His residence in that town, situated on Main Street west of Camp Street, was called "The Grapery" because of its fine vineyard. The doctor was soon busy as both administrator and surgeon in this seashore setting. A contemporary report noted that he "carried on a large surgical practice throughout Barnstable County." He was president of the Barnstable District Medical Society during 1873–74 (6). On August 28, 1874 Dr. Pineo greeted President Ulysses S. Grant and a party of dignitaries on their arrival at Hyannis for a trip on the newly opened railroad to Provincetown (7).

Hyannis harbor was a major center of trade and transshipment during the nineteenth century. Up until the time that the Cape Cod Canal was opened in 1914, all coastal shipping was obliged to travel via the Vineyard and Nantucket Sounds over the shoals and around the Cape.

In those years of shallower-draft vessels, deep water ships were often seen swinging at anchor in Provincetown harbor. Large numbers of seafarers were sailing then in relatively small vessels; if sick or disabled, these men were best cared for ashore. For this purpose, regional Marine Hospital Service facilities were expanded during the last third of the past century. The work of Peter Pineo and his medical colleagues on Cape Cod was a part of this effort.

By Congressional Act in 1798, the federal government assumed responsibility for medical care of sick and injured merchant seamen. This program was financed by monthly contributions deducted from each seaman's wages and was the initial compulsory sickness insurance plan in the United States. The contributory feature was later eliminated and costs were paid from general taxation. At first the medical services were provided solely by private physicians on a contract basis, but in the year 1803 the first U.S. Marine Hospital was built at Charlestown, Massachusetts. Both contract and hospital forms of care continued, with more physicians and additional Marine Hospitals becoming involved in the scheme. This forerunner of the U.S. Public Health Service slowly grew in size and scope.

The need for a government hospital on Cape Cod was early recognized. Dr. George Shove (1817–75), an 1842 medical graduate of the University of Pennsylvania practicing in Yarmouth, served for eight years as surgeon to the local private hospital at Hyannis (8). Through Commonwealth Representative Washburne he and other concerned people presented a "petition for the erection of a marine hospital . . . at Hyannis, Mass." to the 34th Congress in Washington, D.C., on March 31, 1856. The decision on this petition, however, was "Adverse" (9).

Fig. 2. "Residence & Grounds of Dr. Peter Pineo, Hyannis, Mass." Lithograph from *Atlas of Barnstable County, Massachusetts,* Boston, George H. Walker & Co., 1880, p. 351.

Dr. Pineo continued this hospital effort after his return to Cape Cod ten years later. To this end he wrote several pleas which were printed in the *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States.* In a communication to Dr. John M. Woodworth entitled, "The Service on Cape Cod" (1874), Pineo, "Surgeon-in-charge, Marine-Hospital Patients, Hyannis, Mass." spoke eloquently about Cape Cod and its people (10).

"Cape Cod is a promontory which extends from the southeastern coast of Massachusetts some sixty-five miles into the Atlantic Ocean, having an average width of about four miles, and more than one hundred and fifty miles of coastline, with a population of over forty thousand, the majority of whom are seamen, and almost every one of whom expects to be the commander of a ship. Six hundred sail of vessels are owned and hail from the different ports in this district.

"The character of the seamen on this Cape, compared with the class of sailors, hailing from all nations, usually found about principal seaports, is of a high order. Certain diseases most common with seamen are comparatively rare among the Cape men. The reasons for their superior condition and

the more provident habits may be found in the home influences surrounding them, and which they manage to preserve. . . .

"The fostering of these domestic virtues, with their incentives to temperance, industry, and laudable ambition, is alike important to the sailor and to the welfare of the country, and a direct result is seen in the better physique, the higher reputation for seamanship, and the larger proportion of officers among the men who hail from a region which has not inaptly been called 'the nursery of American seamen.'

"The General Government, however, has shown herself something of a stepmother in her care, or want of care, of this nursery. There are nine ports on the Cape where application may be made by seamen for hospital relief, but at no one of them is there anything like suitable provision for their care; . . . for want of which, although 6,618 days' hospital relief was furnished during the last fiscal year, many sailors who were entitled to assistance from the marine-hospital fund, and who would have preferred being treated in the vicinity of their own home ports, were obliged to go to Chelsea or New York for treatment. . . .

"The establishment by the Government of a suitable hospital on the pavilion plant . . . would not involve an expenditure of over $15,000. . . . Its position should be so central that ready access could be had to it, not only by the patients themselves, but by their friends and families."

Again in the following year, Pineo, in a letter to Surgeon General Woodworth, written from Hyannis on September 1, 1875, urged that better facilities be provided for the handling of mariner health needs in Barnstable County (11).

"During the winter of 1874 and 1875, which was unusually severe, there were eighteen vessels wrecked and one hundred and thirty-seven men cast ashore, many of whom were badly frozen, and seventeen died. The number frozen and otherwise sick was so great that accommodations sufficient could not be obtained in this customs district, and they were nearly all taken to Boston, a distance of more than one hundred miles. . . .

"A hospital with the capacity of twenty beds would be sufficient to meet a want greatly needed and is justly due to a region of country from which the mercantile marine probably receives a larger number of seamen in proportion to its population than from any other place in the United States."

Earlier in the same year, on January 8, 1875, Secretary B. H. Bristow of the U. S. House of Representatives transmitted to the Congress "a report on the feasibility and expense of erecting a pavilion hospital at Hyannis, Mass" (12). This document and others were presented in the drive to obtain a federal hospital which would serve the special needs of Barnstable County and the adjacent islands of Dukes County, Massachusetts. The *Annual Reports* of the Marine Hospital Service for the years 1876–79 described this effort in detail.

In the 1880 *Annual Report*, submitted by the newly-appointed Surgeon General John B. Hamilton, there is noted the establishment of a U.S. Marine Hospital at Vineyard Haven on the island of Martha's Vineyard (13). Under "extraordinary expense", a sum of $1,884.66 was listed for "building and outfit . . . of said hospital, including instruments and medical books." The report said:

"This hospital is an abandoned light-house which was turned over for use as a marine hospital. It has been thoroughly repaired, is in excellent condition, and admirably fulfills the needs of the station. In former reports the establishment of a hospital at Hyannis has been recommended. The opening of this hospital renders one at Hyannis unnecessary, and it has not only proved of great benefit, but has considerably reduced the expenses, not only in the Edgartown district, but at several of the adjoining ports."

As sequel to the above frugal accomplishment, five years later the Surgeon General's *Annual Report* stated, "The hospital, being situated at a port which is a port of refuge for vessels in time of storm, etc., has relatively a large proportion of accident cases treated therein. The building was inadequate to the needs of the Service, and an additional ward has been erected. This ward was occupied in August, 1885" (14).

And so, despite Dr. Pineo's pleas for a more sturdy mainland-based hospital at Hyannis, the facility on Martha's Vineyard did fill a need and served its purpose for many years. With the decline of coastal

shipping after the opening of the Cape Cod Canal, and also because of greatly improved communication and transportation in the twentieth century, the U.S. Public Health Service Hospital at Vineyard Haven eventually was closed in April 1952.

With the dashing of his hopes for a Marine Hospital at Hyannis, Pineo, in 1880, left the Service and retired to Boston. Two years earlier he had served as anniversary meeting chairman of the Massachusetts Medical Society, and he was a councilor of that organization for many years. On April 7, 1875 he was elected a member of the Massachusetts Commandery of The Military Order of the Loyal Legion of the United States, an organization composed of former officers in the Union Army. He was also a member of the American Medical Association and the American Public Health Association.

Relinquishing active practice on account of failing health, Peter Pineo spent the last ten years of his life in and near Boston. He was consulted occasionally as an expert in surgical and medico-legal matters. He died of kidney disease at his home in West Somerville on September 10, 1891. On the following day, the *Boston Post* newspaper concluded its obituary of him with this tribute (15):

"Dr. Pineo leaves hosts of friends who will deeply regret the departure from their midst of one of their master minds and who will join in tender remembrance of the deceased with society in general, where he was a favorite."

Acknowledgments

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Memoir of Samuel Bellet

1902–71

By THOMAS M. McMILLAN, M.D.

Samuel Bellet, M.D., died suddenly, though not entirely unexpectedly, on December 13, 1971. Although he failed by some eight months to reach three score years and ten, his life was a full one and filled with fine accomplishment.

He received a B.S. degree from the University of Pennsylvania and an M.D. degree from Jefferson Medical College of Philadelphia. Very soon after completing his internship, he joined the staff of the newly formed Division of Cardiology of Philadelphia General Hospital. Soon thereafter he became associate director and, in 1952, chief of this Division, which, under his direction, grew rapidly and became a complete Clinic in the full sense of this word, being fully involved in the care of patients, teaching and research. Doctor Bellet soon became adept at securing financial support for his work. It is said that through his efforts some $2.7 million dollars came to Philadelphia General Hospital over the years.

Dr. Bellet's investigations covered a wide field and resulted in 275 published papers and three editions of his well known textbook, *Clinical Disorders of the Heart Beat*, which has been translated into three foreign languages. In the notices of his work that have come to my attention, the emphasis has been upon his later researches dealing with tobacco, caffeine and diet in relation to heart disease and the development and use of electronic devices for study of the heart. Important as these studies are, Dr. Bellet's earlier clinical research should not be overlooked. His first investigation after he came to Philadelphia General Hospital was to determine the changes produced by digitalis on the human electrocardiogram. His work put in some order many points that were then in a very confused state. Soon thereafter he and his colleagues made important observations upon the mechanism of the electrocardiographic changes seen in diabetes. These observations led to important studies on the influence of electrolytes and, later, of pericarditis upon the electrocardiogram.

As professor of clinical cardiology and lecturer in pharmacology in the Graduate School of Medicine of the University of Pennsylvania, Dr. Bellet gave regular lectures and clinics. Special postgraduate courses which he organized and directed for the American College of Physicians and the American Heart Association were well received. He was among the first, if not *the* first, to make use of three-day weekend refresher courses. At least two such courses on cardiac arrhythmias which he organized for the American Heart Association were very successful.

For several years Dr. Bellet was a member of the Editorial Board of the *American Heart Journal* and later associate editor of *Circulation* and later still editorial consultant to the *American Journal of Cardiology*. He was for a time governor for Pennsylvania of the American College of Cardiology. He had served as president of the Heart Association of Southeastern Pennsylvania. In 1947 he was elected to fellowship in The College of Physicians of Philadel-

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phia, and he also held fellowships in the American College of Physicians and the American College of Cardiology. As a member of the President's Commission on Heart Disease, Cancer and Stroke, he was sent to Pakistan as an advisor on the construction of the Cardiovascular Institute of Karachi. He also visited Turkey and Israel under a grant of the United States Department of State.

Sam Bellet had a host of friends who will miss his helpfulness which he was always ready to give. To his wife, Jean, and to his daughter, Joan, and to his two brothers and sister the College extends its deep sympathy.

Memoir of Richard Joseph Campion 1894–1971

By HARRY L. FARRELL, M.D.

Richard Joseph Campion was born in New York City on November 7, 1894, the third child in a family of eleven, to James Henry and Mary Ellen (Gillen) Campion. At an early age his family moved to Cleveland Heights, Ohio, where he received his preliminary education, graduating from Heights High School in 1914. He completed his pre-medical studies at St. Louis University (1916) and was admitted to the School of Medicine of the University of Pennsylvania, from which he received his M.D. degree in 1920.

While a student at the University of Pennsylvania, he was quite active in the Undergraduate Medical Association. He served this organization as treasurer in his junior year and as vice president in his senior year. His journalistic activity consisted of being the junior class representative for the development of the yearbook *Scope*, and the following year he was elected assistant editor. He was a member of the John B. Deaver Surgical Society and Phi Chi fraternity. Upon graduation, he served a two-year rotating internship at Philadelphia General Hospital, at the completion of which he accepted a position with the Sun Oil Company as its chief medical officer in Venezuela, and for the next ten years he was stationed at the company's oil development fields near Lake Maracaibo.

The acceptance of this job, and the delay in fostering his own medical education, was prompted by a lifelong trait of putting the interests of others ahead of his own. His father passed away in 1918 while he was a medical student, and to enable his younger brothers and sisters to further their education he elected to work in the undeveloped jungles of South America where he could realize a good and immediate income. This made it possible for him to support the younger members of his family through college. This decision necessitated a ten-year postponement in beginning his practice and his family. Nevertheless, he never complained or even thought of his South American experience in anything but the most rewarding of terms.

While there, he was actively engaged in the formulation of principles and practices for the care of injured employees and he instituted many methods for the transportation of the injured worker. He also was responsible for the development of programs for the care of the families of the workers, and he contributed to the health care of the natives.

During this tenure he gained a great deal of experience in surgery, particularly in trauma, as well as in the ordinary surgical problems found in the average community. Many of the principles he introduced have proven very efficient and are in use today. It might well be said that Dr. Campion is numbered among the pioneers in the management of the patient with serious and multiple injuries.

In 1933 he resigned his position with the oil company to return to the United States and his first love in medicine, urology. While working toward this end he established a general practice, and at the end of five years, in 1938, he completed his train-

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ing and qualified for membership in the American Urological Society, to which he was admitted the same year.

Dr. Campion was a member of the faculty of the Graduate School of Medicine of the University of Pennsylvania and was on the staff of the Graduate Hospital in the Urological Department. He was also on the staff of the Philadelphia General Hospital. His other affiliations consisted of chief of urology at Roxborough Memorial Hospital, where he was past president of the staff, and chief of urology at Doctors Hospital, where he was one of the founders and had served as treasurer.

He was a member of the Philadelphia County Medical Society, the Pennsylvania Medical Society, the American Urological Society, the American College of Physicians and was a charter member of the Industrial Medical Association. He was elected to membership in The College of Physicians of Philadelphia on April 5, 1944. He was a lieutenant commander in the Naval Reserve during World War II.

In 1947 Dr. Campion was named medical director of the Bell Telephone Company of Pennsylvania and the Diamond State Telephone Company of Delaware. He retained this affiliation until his retirement in 1959. He was a Medical Consultant with the Western Electric Company during these years and continued as such after entering retirement.

As medical director of the Telephone Company, he enjoyed excellent rapport with his entire staff, both medical and nonmedical. Since his experience in industrial medicine was so great, he could look upon the problems with which he was confronted daily without prejudice, and the decisions he made, often after much thought and deliberation, could always be accepted as fair to both the employee and employer. As a result of this the employees knew they would be given just consideration, and with them he also enjoyed a good relationship.

Dr. Campion was active in civic affairs and served on numerous and various community planning boards. He was a member of the Lions Club of Springhouse, Pennsylvania, and served as voluntary health officer of Lower Gwynedd Township, Montgomery County, for many years.

Dick Campion, as he was known to his friends, was truly a great person—quiet, considerate, cheerful and unassuming. If he had a care or worry, he never let it be known. He was a great raconteur, and his stories along with his vibrant personality insured the success of any meeting he attended. He was an ardent fisherman and on the opening day of trout season he could usually be found along his favorite stream in the Poconos.

Dr. Campion was a devoted husband and father. He is survived by his wife, Anna Cannon Campion, a daughter, Mrs. James Large, two stepsons and four sisters.

All who knew Dick Campion mourn the loss of a good friend and colleague.

Memoir of Leon H. Collins, Jr.
1899–1972

By DONALD M. PILLSBURY, M.D.

Leon H. Collins, Jr., of Philadelphia, Pennsylvania, was born in Merchantville, New Jersey, on November 11, 1899, and died on February 11, 1972. He received his A.B. degree from Swarthmore College in 1921 and his M.D. degree from the University of Pennsylvania School of Medicine in 1925.

Dr. Collins was a resident from 1925 to 1927 and chief medical resident during 1927–28 at the Hospital of the University of Pennsylvania. He was a National Research Council Fellow in Medicine in 1928–29. Dr. Collins was an associate in medicine and assistant professor of medicine at the University of Pennsylvania School of Medicine. He was on the staffs of the Hospital of the University of Pennsylvania, the Philadelphia General Hospital and the Philadelphia and Coatesville Veterans Administration Hospitals. Dr. Collins was a member of the American Medical Association, the Association of Military Surgeons of the United States, the National Tuberculosis Association, the American College of Chest Physicians, the American Thoracic Society, the Aerospace Medical Association, the Pennsylvania Medical Society and the American College of Physicians, and was a Diplomate of the American Board of Internal Medicine. He was elected as a Fellow of The College of Physicians of Philadelphia in 1934.

Dr. Collins is survived by his wife, Mrs. Alice L. Collins, a son, Henry L., a daughter, Mrs. Elizabeth C. Bowen, and six grandchildren.

Having known Dr. Collins since 1928, I share the feeling of all his friends and associates that here was a man for all seasons, possessing a quiet dignity, great professional competence, high personal principles, and unwavering loyalty and graciousness to those he regarded as friends, of whom there are many.

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Memoir of William Lawrence Estes, Jr.
1885–1971

By WILLIAM T. FITTS, JR., M.D.

William Lawrence Estes, Jr., was born, brought up, and carried on his life's work in Bethlehem, Pennsylvania. Affectionately known as "Dr. Bill" by many throughout the country, he was born in this eastern industrial city on March 1, 1885. Mainly through his efforts, the treatment of injuries and the teaching of trauma in the Bethlehem area became a model for other communities to follow. For his contributions to surgery and his leadership qualities he was widely recognized by national surgical societies. He was a member of the American Surgical Association and the Southern Surgical Association. He was elected president of the American College of Surgeons in 1957 and president of The American Association for the Surgery of Trauma in 1958 —an impressive record, indeed, for a man who had always worked in a relatively small community, without a close affiliation with a medical school or large clinic.

Dr. Estes was graduated from Lehigh University in 1905. Always dedicated to Lehigh, he was later the school physician for a time and a trustee for a period of twenty years. Lehigh conferred an honorary degree on him in 1948. He entered The John Hopkins Medical School, was graduated fourth in his class in 1909, and was one of the few graduates selected by the faculty to intern at Hopkins. From Baltimore, young Estes went for further surgical education to the Mayo Clinic. Here he served as a fellow in general surgery and urologic surgery from 1910 to 1912. At Rochester he was greatly influenced by the work of Dr. E. Starr Judd and of Drs. Charles and Will Mayo. Dr. Will was so impressed by Estes that he invited him to remain at the Clinic as an assistant, but Bill returned to Bethlehem in 1912 to become associated with his father in the practice of surgery. Dr. Estes, Sr., was then Chief of Surgery at Saint Luke's Hospital in Bethlehem, and Chief Surgeon for the Lehigh Valley Railroad. He soon became responsible for all emergencies, for urology, and for a large part of the abdominal surgery.

Dr. Estes's early years in Bethlehem were interrupted by World War I. On his thirty-third birthday, March 1, 1918, he entered the Medical Corps of the Army. He learned to use Dakin's solution through training at the Rockefeller Institute; he became a surgeon with Mobile Operating Unit #1, a group of surgeons and nurses working in portable operating rooms that could be set up in forty-five minutes. Dr. Bill served in France on a team of casualty surgeons under Dr. Frederick Bancroft and operated on many gunshot wounds.

Back in Bethlehem for good after the war, Dr. Estes worked with his father until the senior Estes stopped operating in 1934. He and his father wrote the chapter on fractures in Albert J. Ochsner's *System of Surgery,* published in 1918, which Dr. Bill revised through several editions. He contributed a chapter, "Fractures of the Tibia and Fibula Involving the Ankle," in Christopher's *Textbook of Surgery.* In 1920 he published a paper in the *Annals of Surgery* on a study of the causes of delayed and non-union fractures of the long bones, and in the same journal in 1930 he wrote an article on open reduction and fixation of

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open fractures of the tibia and fibula. More recent fracture articles had been on fractures in childhood (1954) and the use of Russell and skeletal traction with balanced suspension for femoral shaft fractures (1956). Dr. Bill had always been interested in the complete rehabilitation of the injured patient and published studies on the aftercare of the injured and on the surgeon's responsibility in rehabilitation of the injured.

Equal to fractures in Dr. Bill's interest was injury to the abdomen, and he contributed many papers on this subject. Most of these concerned non-penetrating abdominal trauma. He was invited to give the Annual Oration on Trauma by the American College of Surgeons in 1953, "Present Day Problems in Non-penetrating Abdominal Trauma."

Bill Estes has been distinguished in the teaching and organization of trauma care. His father founded the Lehigh Valley Committee on Trauma in 1916, and Dr. Bill became its chairman in 1922. He became chief surgeon of Saint Luke's Hospital in Bethlehem in 1930. He was extremely proud of the new Emergency Department at Saint Luke's and described it in a chapter, "The Hospital Emergency Department," in Moseley's *Surgery of Trauma,* 1962.

In national trauma societies, Dr. Bill was most active in the Committee on Trauma of the College, and The American Association for the Surgery of Trauma. He was a giant in both Societies, contributing to both their scientific and social activities. He served as president of the AAST in 1958 and gave his presidential address on "The American Association for the Surgery of Trauma and Its Objectives," published in the *American Journal of Surgery* in April, 1959.

Not the least, and perhaps the most important factor in Bill Estes' success was an extremely happy marriage to Anne Greble in 1913. She accompanied Dr. Bill on trips and medical meetings. She shared his love of the outdoors, and for years she accompanied him on canoe trips. One of their favorite interests was the renowned Bethlehem Bach Choir, of which Dr. Bill was president for twenty years.

Ten years after his retirement he was called back as Director of Medical Education of Saint Luke's Hospital. He died on June 15, 1971.

Memoir of Constantine P. Faller

1890–1971

By FRANCIS J. SWEENEY, M.D.

Constantine P. Faller, M.D., F.A.C.P., of Harrisburg, Pennsylvania, was born in Carlisle, Pennsylvania, on August 20, 1890, and died on August 2, 1971. Dr. Faller attended the Dickinson Preparatory School and received his M.D. degree from the Medico-Chirurgical College of Philadelphia in 1916.

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Dr. Faller was Honorary Consultant in Internal Medicine to the Harrisburg Hospital and Medical Administrator of the Bureau of Vocational Rehabilitation, Commonwealth of Pennsylvania. He was a member of the American Medical Association, the American Heart Association, the American Geriatrics Society, the American Dermatological Association and the Pennsylvania Medical Society. Dr. Faller was elected a Fellow of the American College of Physicians in 1940 and was a Diplomate of the American Board of Internal Medicine.

Memoir of E. Harold Hinman

1904–71

By EDWARD J. HINMAN, M.D.

E. Harold Hinman, physician, educator and professor of preventive medicine at Jefferson Medical College from 1962 to 1969, died on December 25, 1971, at the Johns Hopkins Hospital, Baltimore, Maryland, following a long illness.

Dr. Hinman was born in Wicklow, Ontario, Canada, on March 20, 1904. He studied at the Toronto Normal School and was graduated with honors from Queens University in 1927. He received an M.S. degree at Cornell University in 1928 and a Ph.D. degree from Cornell in 1930. He received an M.B. degree at Louisiana State University Medical Center in 1937 and his medical degree from the same university in 1938. Through a Rockefeller Foundation fellowship, he obtained an M.P.H. at The Johns Hopkins University in 1942.

Dr. Hinman came to the United States in 1927 and was naturalized in 1933. He worked as a research and teaching assistant in the Department of Entomology at Cornell University from 1927 to 1930, following which he spent two years on a National Research Council fellowship at the Department of Tropical Medicine at Tulane Medical School. From 1932 to 1937 he was Assistant Professor of Parasitology and Medical Entomology in the Department of Tropical Medicine at Lousiana State University Medical Center. He was senior biologist in the Malaria Control Division of the Health and Safety Department of the Tennessee Valley Authority from 1937 to 1942 where he was division chief from 1947 to 1948. He lived in Latin America as the head public health officer of the Health and Sanitation Division of the Institute of Inter-American Affairs, San Salvador, El Salvador, from 1942 to 1943, and in Mexico from 1943 to 1946. His career in public health continued as director of the School of Public Health, University of Oklahoma, from 1948 to 1952. He was then appointed dean of the School of Medicine at the University of Puerto Rico from 1952 to 1959. After serving as chief of the Technical Resources Division, Office of Public Health, in Washington, D. C. from 1959 to 1962, he was appointed professor and head of the department of preventive Medicine at Jefferson Medical College. From 1969 to 1971, he served as Commissioner of Health of Wyoming and Livingston Counties.

Dr. Hinman had a special interest in malaria control. In 1946 he received the Eduardo Liceago Medal from the Government of Mexico for distinquished contributions to public health in Mexico. He was a diplomate of the American Board of Preventive Medicine, and a member of several medical societies, as well as Alpha Omega Alpha and Phi Kappa Phi. His publications dealt with research on malaria control, parasitic diseases of public health importance, etc.

The E. Harold Hinman Memorial Fund has been established at Jefferson Medical College and is receiving memorial contributions.

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Memoir of S. Leon Israel

1906–71

By CHARLES W. CHARNY, M.D.

S. Leon Israel was born January 29, 1906, and died December 23, 1971.

He had a full, successful and satisfying life—scholar, researcher, teacher, administrator, he was all of these and more. He was a most unusual man, thorough to the point of compulsiveness, remarkably well organized so that he scheduled his activities for the day with precision, even on vacation.

Early in his career, he realized the importance of good public speaking; his first important address, accepting an award for postgraduate work after a residency at the Mount Sinai Hospital in Philadelphia, remains as vivid in my mind as his noteworthy "Yang and Yin" Presidential Address to the American Fertility Society in 1961.

He was a remarkably good teacher, revered by his students as well as his interns and residents. That they loved him and respected him is evidenced by frequent re-visits years after they left Pennsylvania Hospital to sit with him and listen again with admiration and nostalgia. His busy schedule did not preclude a sympathetic ear to anyone who needed him. He spent hours listening to their problems, offering advice, helping them with letters of reference, with telephone calls, with guidance influenced by years of experience and attachment to a calling he loved dearly. These men and women created a large demand on him for visits to their communities. He always accepted; he considered it his duty. When I advised him last summer to cancel a trip for several lectures sponsored by former residents, he told me that he had never before disappointed any group and that he did not want to do so now.

He accepted his illness philosophically, refused to discuss it with anyone, answered his solicitous friends that he felt well and was progressing in his recovery, this despite the fact that he was fully aware of the fact that his illness was terminal.

All of this occurred during a critical period in his life. He had just retired as professor and head of the Department of Gynecology and Obstetrics at Pennsylvania Hospital, part of the University of Pennsylvania, and was beginning a new life as professor of obstetrics and gynecology at the University of Florida at Gainesville. He planned to devote his time to some teaching, and to editing *Obstetrics and Gynecology* and to continuing his travels and lecturing. If he also thought of increased leisure, he never mentioned it.

He was co-author (with Charles Mazer) of *Menstrual Disorders and Sterility,* literally a best-seller in its field. He was the sole author for the fourth edition (1959) and the fifth edition (1967), in addition to many scientific articles on related subjects.

He was awarded many honors. He was a Fellow of the American Gynecological Society, the American Association of Obstetricians and Gynecologists, the American College of Obstetrics and Gynecology, the American College of Surgeons, the American Fertility Society (President, 1960–61), The College of Physicians of Philadelphia. He was former director (1965–68) of the American Board of Obstetrics and Gynecology and consultant in Gynecology and Obstetrics, Bureau of Medicine and Surgery,

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Department of the Navy. He acted as visiting professor at many institutions, many of them overseas, including South Africa, Australia, and New Zealand.

He was president-elect of the American Gynecologic Society and was to assume office in June, 1972. He had even formulated his acceptance address. All that was needed, he told me, was considerable editing and some refinement. He never finished it. He insisted, despite my pleading, that it could be read by him alone.

Once, in a discussion on memorial lectureships, he made the statement that they should be endowed for no more than five years, that after that time, many of the younger men attending the lecture hardly recognized the name and that the preliminary recital of the accomplishments of the honored one was then accepted as a necessary evil. This judgment will hardly apply to Leon. He has left behind a sufficient number of young admirers who will remember him and quote him and carry forward his teachings much beyond the limits that he set for himself.

Memoir of Joseph W. Spelman 1918–71

By A. REYNOLDS CRANE, M.D.

A fortuitous set of circumstances in the early 1950s—the writing of the City Charter, an alert and active organization of pathologists and a concerned and forceful County Medical Society—culminated in the replacement of the Office of Coroner in Philadelphia by the Medical Examiner's System for the investigation of sudden and unexplained death. Equally important and equally fortuitous was the selection of Joseph W. Spelman, by a panel designated under the Civil Service Commission, as the first chief of this new section of the Department of Health. A strong, knowledgeable and purposeful leader was necessary to put flesh on the skeleton of the new office. When Dr. Spelman accepted the appointment and assumed his duties in 1956, Philadelphia at long last and after decades of frustration, was assured an efficient and effective system of forensic medicine.

Old politicians do not give up easily, and in an effort to block a requirement of training and experience in forensic pathology, the office was designated as "Examiner" rather than "Medical Examiner." While this worried the search panel, quite characteristically Dr. Spelman shrugged it off as a petty annoyance which would disappear as the office and the incumbent proved their worth. And so it did, for he brought to the office a background of sound education (Kent School and Yale, B.S. and M.D.), special training in forensic medicine (Department of Legal Medicine, Harvard Medical School), seven years of experience as chief medical examiner for the State of Vermont and certification by the American Board of Pathology in Forensic Pathology.

Joseph W. Spelman was born in Waltham, Massachusetts, on April 4, 1918, to William Chapman Spelman, Jr., and Elinor Burnham Spelman. The younger of two children, he shared with his sister, Kate, the affection and stimulation of a devoted family. Raised in Brooklyn, New York, he knew the simple and yet challenging thrill of walking the Brooklyn Bridge to watch the sunlit glow of the growing New York sky line, of riding the upper open deck of a Fifth Avenue bus through the wonders of parks and homes and of steering (from behind the motorman) an open trolley through the streets to the sands and marshlands that led to the ocean shores of Coney Island before that vestige of nature was swallowed by Megapolis. Starting with city life, his early energies and enthusiasms were concentrated in electricity, radio and stereophonic sound, but summers in his mother's New England family home led him to the strengths of rural life and the fascination of the challenges of nature, so that in the end he chose a career in medicine rather than electrical engineering, although as his sister, Deaconess Knapp, puts it he had a lifelong love affair with both.

To each pathologist who knew and had to work with the old coroner's system in Philadelphia, the accomplishments of Dr. Spelman in building one of the most outstanding departments of forensic medicine in the country has indeed been amazing. Soon recognized as a man interested solely in issues and problems, not in the personalities about them, he gained support not only from the Commissioner of Health, but City

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Council, the Police Department, the District Attorney's Office and the medical profession. A ghost of a unit, which under the coroner consisted of a musty building, dust filled rooms, one recently discharged technician and a few political hacks, was, over a few years, transformed into a live and dynamic department with efficient deputies tabulating reported cases, effective units investigating the actual scenes of sudden death in cooperation with the police, a staff of trained forensic pathologists to pursue the medical detective work, an outstanding toxicologic service, and an expert photographic unit for pictorial documentation of each aspect of puzzling cases. Striking was the change from political expedience to a practice of cooperation with hospitals and departments of pathology and a truly scientific pursuit of facts. Especially commendable was the forthright and open approach which allowed anyone with an established and legitimate concern in a case to review his records and findings, bold testimony to the fact that the office was interested only in the truth, not charges or indictments. He early abolished the horror of the so-called "coroner's inquests" and, in line with his interest in communications, developed a closed circuit television system to permit identification of bodies at the morgue with less shock to bereaved relatives.

Dr. Spelman took a very broad view of the responsibilities of his office and felt that they went well beyond the identification of homicide and prosecution therefor. His concern extended, among other things, to suicide and its prevention, to poisoning and its prevention and treatment (he was responsible for the establishment of the city's Poison Information Center), to operative deaths and their reflection of medical practices and standards, to the improvement in the standards of and systems for rendering emergency medical care and to the need for safety standards in various occupational and vehicular areas, each of these concerns being based upon the carefully evaluated evidence brought to his ken by the cases seen in his daily work. His burrowing for facts occasionally offended some people, but, nevertheless, the basic honesty and directness of his approach won universal respect.

In viewing his accomplishments for the city, one tends to lose sight of him as a man, for though emphatic, he was quiet, kind and unassuming. His first wife died shortly after their arrival in Philadelphia. Subsequently he married Concetta Riccuti who did so much to give him and his children, William, John and Elinor, the comfort and encouragement of a devoted and affectionate family such as he knew as a boy. He assumed his responsibilities in the affairs of medicine and was a member of numerous medical societies, such as the College of American Pathologists, the American Society of Clinical Pathologists, the American Academy of Forensic Medicine, the American Association of Poison Control Centers, the International Association for Suicide Prevention, etc. At the time of his death, he was president of the National Association of Medical Examiners. During World War II, he served as a captain in the medical Corps of the U.S. Army.

Dr. Spelman's death at an early age has been a great loss to medicine and to the City of Philadelphia, for the benefits of the Office of the Medical Examiner, which he developed into one of the best in the country, extend into many aspects of the life of the city and of its citizens. To his credit and to our advantage, he has left a heritage of a well structured and efficiently functioning department which will continue to carry out the ideals of a dedicated servant of man and of this community. For this, we may all well say, "Thank you, Joe."

Memoir of Edward Steinfield
1890–1972

By HENRY J. TUMEN, M.D.

Dr. Edward Steinfield, one of Philadelphia's most brilliant internists, investigators and teachers, died on January 4, 1972. Because his last years had been spent in retirement, Dr. Steinfield and his work may not be well known to many of today's physicians. Those who were fortunate enough to be his students, or to work closely with him, will always remember him as a great clinician and a keen scientist and as a teacher who did much to mold their careers.

Dr. Steinfield was born in Carmel, New Jersey, on November 1, 1890, but he was really a Philadelphian. His high school was the old Central High; his pre-medical and medical education were obtained at the University of Pennsylvania, from which he was graduated in 1913. His internship was served at the former Jewish Hospital of this city. In 1916, Dr. Steinfield began his work in infectious diseases, a lifelong effort, and became affiliated with the Department of Experimental Pathology and of Research Medicine at the University of Pennsylvania. In association with Dr. John Kolmer he made many of the earlier contributions to the study of pneumonia and of streptococcal and fungal diseases. His interests also embraced many of the first efforts in the then new field of chemotherapy. Dr. Steinfield was also one of the pioneers in what is now known as Clinical Pathology. He became director of the laboratories at the Jewish Hospital, where he also served for many years as an internist and consultant.

In 1918 Dr. Steinfield was appointed to the faculty of what was then the Graduate School of Medicine of the University of Pennsylvania. He continued his active association with the Graduate School, and with the Graduate Hospital, until becoming emeritus professor of medicine in 1956. Dr. Steinfield was soon well known as a keen clinician and an excellent consultant. He had tremendous skill in searching out the essential clue to a complicated problem and in finding its solution. His teaching clinics were among the highlights of the course in internal medicine of the Graduate School and he was one of the school's most popular teachers.

As one reviews Dr. Steinfield's publications, one is impressed by the breadth of his interests. His many papers deal with numerous aspects of bacterial and fungal infections, with chemotherapy and with many problems in hematology. Because of his basic work in the chemotherapy of pneumococcal and fungal diseases, Dr. Steinfield was elected to Sigma Xi. He became a Fellow of the College of Physicians of Philadelphia in 1936.

Although he gradually withdrew from his medical activities, Dr. Steinfield's later years were far from idle. He continued to be a voracious reader and covered an almost unbelievable range of subjects. Those who knew him considered him an authority on economics and he was also widely read in the classic and modern philosophers and was an expert on the writings of Thomas Carlyle.

Dr. Steinfield is survived by his daughter, Mrs. Marshall Lesser, of West Hempstead, N.Y., and by two grandchildren. His wife had died and an only son, Dr. Winton Steinfield, was drowned in a sailing acci-

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dent a few years ago. Winton's death was doubly tragic because this occurred when Winton, who had survived the dangers of the Burma campaign during World War II, was just beginning a most promising career as an investigator at Brookhaven. There can be little doubt that his son's untimely death hastened Dr. Steinfield's retirement and his withdrawal from medical activity.

Edward Steinfield was representative of all that is admirable in a physician. Though he was unassuming, and modest to a fault, those who knew him quickly became aware of his intelligence, his tremendous store of knowledge, his ability to probe a difficult problem. Dr. Steinfield was an ardent student, a skillful investigator and a willing and capable teacher. He was a kind man, an honorable, trustworthy and devoted friend. He has left a heritage that will be cherished by his former students and associates, who will remember him because he earned so completely our admiration, respect and affection.

Memoir of Joseph Stokes, Jr.
1896–1972

By ALFRED BONGIOVANNI, M.D.

A gentle voice has been silenced. And there is a certain stillness in those halls where walked Dr. Joseph Stokes, Jr., for so many years. He was a man great and kind, of insatiable curiosity and staunch loyalties. His interests were catholic and continuous.

Joseph Stokes, Jr., was born on February 22, 1896, in Moorestown, New Jersey, and he died suddenly on March 9, 1972, in Philadelphia. He was educated at Haverford College and the School of Medicine of the University of Pennsylvania, from which he was graduated in 1920. Except for an internship at the Massachussetts General Hospital, he spent the remainder of his highly productive life at the Children's Hospital of Philadelphia and the School of Medicine at the University of Pennsylvania. He became the chairman of pediatrics in the University and physician-in-chief to the Children's Hospital in 1939. Although his official retirement occurred in 1963, as emeritus professor of pediatrics he continued his field studies with newer vaccines from offices within the Department of Community Medicine in the Henry Phipps Institute of the University of Pennsylvania.

The major thrust of his efforts throughout his life concerned the prevention of infectious disease. With the collaboration of Drs. Gertrude and Werner Henle, the first vaccine against influenza was prepared and tested. He demonstrated that the administration of human gamma globulin effectively prevented infectious hepatitis, and this tool remains as invaluable today as when he first described it. Later, with Drs. George Hammond and Lewis Coriell, he showed that human gamma globulin would also protect against poliomyelitis, and for that time this was a major step prior to the development of vaccination. In collaboration with Dr. John Enders, he developed skin tests and immunization procedures against mumps. More recently with a number of collaborators he played an important role in the development of the measles vaccine.

He was a member of numerous organizations. And he was the last surviving member of the first Armed Forces Epidemiological Board. During World War II he was special consultant to the Surgeon General, travelling through war zones and rendering his professional skills in the control of infectious hepatitis. He was a member of the American Philosophical Society, the American Pediatric Society (President in 1958), Society for Pediatric Research, and the Interurban Club. He received many honors. Among these were the Gordon Wilson Medal of the American Clinical and Climatological Association in 1952, the Shaffrey Medal of St. Joseph's College in 1954, the James D. Bruce Award of the American College of Physicians in 1962, the John Howland Medal of the American Pediatric Society in 1962, and the Medal of the Children's Hospital of Philadelphia in 1968. He received honorary degrees from Haverford College in 1952, the University of Pennsylvania in 1964 and the Hahnemann Medical College in 1971. These ample recognitions he accepted with humble satisfaction, but he always kept to his simple and warm life style.

This memoir was prepared and published at the request of the Council of The College of Physicians of Philadelphia.

Among his notable experiences there are a few rather unusual ones. In 1966 he was appointed Honorary Consul General of Japan in Philadelphia by the Japanese Government. He delivered the First Thorvald Madsen Memorial Lecture at the University of Copenhagen before King Frederick IX and Queen Ingrid of Denmark in 1970. He was then awarded the Thorvald Madsen 100th Anniversary Prize. He assisted in bringing food to children in unoccupied France during World War II through the American Friends Service Committee. He was extremely proud of the Medal of Freedom which his nation awarded him for his distinguished services during World War II.

Dr. Stokes reached out to all people who came his way, and they in turn were enriched by the encounter. He is survived by his widow, Mrs. Frances E. Stokes, and four children, Miss Jean Stokes, Dr. Joseph Stokes, III., Professor Donald E. Stokes, and Mrs. Peter Szanton. He is also survived by his brother, Dr. S. Emlen Stokes, and a sister, Mrs. Robert C. Smith.

Memoir of Jacob Earl Thomas
1891–1972

By MARJORIE V. BALDWIN, M.D.

It was almost sixteen years ago that I first became acquainted with Dr. Thomas. He had come to Loma Linda to discuss the invitation of the University for him to join the faculty as professor and chairman at the Department of Physiology. As we visited in my office, I was impressed by the breadth of his knowledge and interests and also by the indications of his ability to adapt comfortably to new circumstances and people. His congenial manner and pleasant smile made it easy to establish rapport right from the start. These first impressions were confirmed in all our dealings since that first meeting. Today we are met to honor the memory of this noble and good man.

Jacob Earl Thomas was born at Steilacoom, Washington (near Tacoma), on January 31, 1891, the son of John and Nettie (Wyckoff) Thomas. He passed to his rest at Loma Linda, California, February 2, 1972, just two days after his eighty-first birthday.

Earl attended a Free Methodist Church school and also the Free Methodist Seminary (later known as Seattle Pacific College). He went on to earn the B.S., M.D., and M.S. degrees from St. Louis University. After his retirement from the faculty of Jefferson Medical College in Philadelphia, this institution conferred on him the Doctor of Science degree.

In 1917 Dr. Thomas was married to May Johnson and to them were born two children, Jacob Earl, II, and Marjorie Ellen (Mrs. John Fredrick Larkin). After the death of his wife in 1957, Dr. Thomas was married to Grace Neal Webster. She and the two children and a sister in Seattle, Mrs. Ruby Gavin, and the twelve grandchildren deeply mourn the passing of Dr. Thomas, as do his former colleagues, students and a large circle of friends.

The early academic career of Dr. Thomas included faculty appointments in the schools of medicine of St. Louis University and West Virginia University. For almost thirty years from 1927 to 1956, he served as professor of physiology and chairman of the department at Jefferson Medical College. Following this he served in a similar capacity at Loma Linda University until 1964, when he relinquished the chairmanship but continued to teach and carry on his significant research.

Throughout his professional career Dr. Thomas was active in various medical and scientific societies and associations. He was honored by several of these for his signal contributions to the advancement of scientific investigation. He was selected to receive the Friedenwald Medal at the meeting of the American Gastroenterological Association at Dallas next May. Physiologists throughout the world are indebted to him for the 'Thomas canula' widely used for experimental studies on the pancreas.

In 1950 Dr. Thomas published a volume dealing with his chief research interest, the exocrine functions of the pancreas. He was a contributing author to the *Encyclopedia Britannica*. A significant part of his writings consisted of chapters which appeared in the *Handbook of Physiology*. He just finished his portion of a chapter on the exocrine pancreas function for a text in gastroenterology. In addition he contributed many articles to scientific journals in his field of competency.

Transcending his distinguished achieve-

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ments in science were the human qualities which all who knew him came to appreciate so much. He was a person of deep spiritual insights and understanding. His early ambition was to be a medical missionary. From his home and early education he caught a lasting vision of service, that higher goal in life of *giving* rather than *getting*. Because he was a true teacher he found fulfillment and satisfaction in the progress and accomplishments of his students. He subscribed fully to the motto of the University, "To Make Man Whole," and he directed his efforts toward this goal. In a singular manner he was committed to the University's objectives for education, discovery and service.

The influence of a good man lives on after his life has ended. It is "like the glow of the descending sun, casting its glories athwart the heavens, lighting up the mountain peaks long after the sun has sunk behind the hill."

We shall always cherish the memory of this godly, humane friend. And we shall always cherish, too, the memory of his smile which we know hid at times heartache and pain, but most often simply reflected the fact that he was at peace with God and his fellow man.

> Death, be not proud, though some have called thee
> Mighty and dreadful, for thou are not so. . . .
> One short sleep past, we wake eternally.
> And death shall be no more: DEATH, *THOU* SHALT DIE!

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A BICENTENNIAL FEATURE

The Pediatrics of Benjamin Rush[1]

By SAMUEL X RADBILL, M.D.[2]

BENJAMIN Rush lived from 1745 to 1813. Because he was a signer of the Declaration of Independence, it is fitting that we should turn our attention to him at this time as a prologue to the Bicentennial celebration of the nation's birth. If he had done nothing else but sign the Declaration of Independence, he would have done enough to win everlasting fame.

But Benjamin Rush was a great physician in his time. Not only was he one of America's outstanding medical educators, but he was at the same time a medical practitioner of great repute. Limiting his practice to internal medicine, he was in fact in family practice so that he took care of young and old without regard to age. Children, therefore, formed a large part of his practice, and the medical aspects of childhood constituted an important part of his medical writings. Besides, his loving wife bore him thirteen children, four of whom died in infancy, so that his own family supplied him liberally with pediatric experience.

Though he was a generalist, he was instrumental in initiating a trend that led to the acceptance of psychiatry as a special branch of medical study and practice, so that it is with good reason that he is venerated as the patron saint of the American Psychiatric Association. This paper is limited, however, to the pediatric parts of his writings.

The care of the newborn infant in Rush's day was the province of midwifery. Rush did not practice either surgery or midwifery, but he did occasionally take care of very young infants as well as older children. Once the child was weaned and free of its mother or nurse (or, perhaps we should say, the mother freed of the child), its medical care became the province of the physician. While Rush was called into consultation in serious cases affecting newborn or very young children, he really had only meagre experience with them and relied on his reading for what knowledge he had about them. In his lectures he did mention that he visited sick children, and he once remarked that when he first commenced prac-

[1] Section on Medical History, The College of Physicians of Philadelphia, 10 October 1972.

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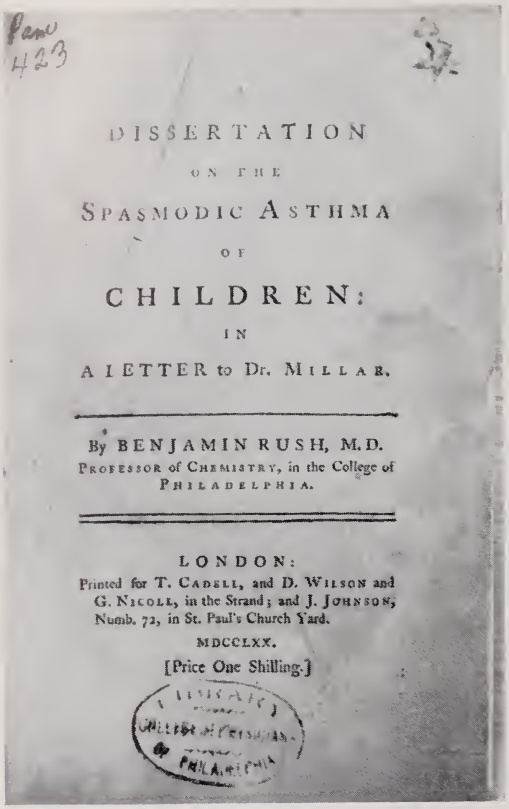

DISSERTATION
ON THE
SPASMODIC ASTHMA
OF
CHILDREN:
IN
A LETTER to Dr. MILLAR.

By BENJAMIN RUSH, M.D.
PROFESSOR of CHEMISTRY, in the College of PHILADELPHIA.

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FIG. 1. Title page of *A Dissertation on the Spasmodic Asthma of Children*. Reproduced by the permission of The College of Physicians of Philadelphia.

tice in Philadelphia he could not have retained the confidence of his patients when called to visit children unless he prescribed a worm medicine. Worms, teething and convulsions were the three conditions that concerned people when children were sick in those days. But Rush said after he was in practice a considerable time the common opinion of worm disease was gradually banished.[3] What he meant was that he changed his views on worms, as we shall see.

Many of Rush's case reports, lectures and addresses were published separately as well as in successive collected editions. His *Medical Inquiries and Observations* were thus largely made up from his lectures along with discourses such as those on yellow fever, measles, scarlet fever and so on. Many student notebooks are also extant in different libraries throughout the country, for it is likely he taught more medical students than anyone else in the United States. One of his earliest publications was *A Dissertation on the Spasmodic Asthma of Children* (Figure 1). He had just returned from his medical studies in Edinburgh and opened an office at Philadelphia in August, 1769, at the age of 23 when he was called to treat a child of three in an attack of croup which proved to be fatal in about 12 hours. It so happens that John Millar had just published (1769), in London, *Observations on the Asthma and on the Hooping Cough* in which he had clearly distinguished the clinical differences between these two diseases and also presented a good clinical description of croup as distinguished from asthma as we know it today, which he called chronic asthma. Millar had autopsied only one case of the many he had seen, and since Rush did an autopsy on his own case with the aid of Dr. Duffield, we can understand why he was anxious to report it in the press. There was no medical journal available to him in the United States, so that he first published his case report in the *Pennsylvania Gazette* on or about December 5, 1769. To obtain a wider medical audience, however, he sent the report on March 6, 1770, to Dr. Millar who then published it in London in November that year.

Rush, in his paper, quoted freely from Millar's previous work. He called the condition "convulsive asthma of children," for to Rush the words spasm and convulsion were practically synonymous. In Philadelphia, he said, it was commonly known as "hives," which he later thought was derived from "heaves," but stated (after Millar) that it was sometimes accompanied with blotches which in Scotland and Ireland obtained the name of "hives." Another term for it was the "bowel-hives," but he could not at this time offer any explanation about the deri-

[3] Adams, Granville Q. *Notes from Doctor Rush's Lectures Delivered in the University of Pennsylvania in 1797*. Facs., 1957.

vation of the word hives, defining it as "a difficulty of breathing, joined with hoarseness and other symptoms of oppression and disorder in the lungs." Later, he was able to explain its use in connection with cynanche trachealis. In accordance with Millar's book, he asserted that Dr. Home was the first to give an accurate account of the disease and that Home had named it croup or suffocatio stridula.

In reporting the postmortem examination of his case, he mentioned the sudden onset of respiratory distress so that "her abdominal muscles were brought into excessive action." He also mentioned the "quick pulse, pretty considerable fever, the face of that livid colour, which, above all things, characterizes this disease." There was no evidence of inflammation in the lungs or trachea, so that he concluded it was not an inflammatory disease but a spasmodic affection. To determine the site of the obstruction to breathing, he introduced a blow pipe into the trachea and found difficulty inflating the lungs, from which he assumed the spasm affected "the extremities of the bronchia," that is, the bronchioles. He discussed also the differences in his case from cases of membranous croup.

In regard to treatment, he told Dr. Millar that since he used Millar's method of treatment (which emphasized the value of asafoetida), he "never lost a single patient," from which we might suppose he read Millar's book after he had treated this fatal case. Rush also noted that tracheotomy had been performed "by a gentleman of well-known skill in physic and medicine in Philadelphia" but without success. Rush, himself, favored opium as an antispasmodic.

He discussed the physiology of children in his lectures on the Institutes of Medicine. Animal life, he taught, in accordance with the doctrines of John Brown, is a forced state maintained by stimulants both external and internal. The warmth communicated to the fetus from the mother, together with the circulation of its own fluids, acts as a powerful stimulus to keep up life in the fetus. The movements of the mother, as well as fetal movements after the third month also act as stimulants. Accordingly, he reasoned, it is strange that a cradle should ever have been denied it after it comes into the world. Thus, he was obviously opposed to the practice of keeping the baby in bed with the mother, or of placing it in a trundle bed. Yet the trend away from cradles had not yet begun and cradles were still in common use in his day.

Although Shakespeare spoke of seven ages of man, Rush divided the life span into five stages: fetal, infancy, puberty, middle life and old age. Shakespeare also said: "When we are born we cry that we are come to this great stage of fools." But Rush had a different explanation for the first cry of the newborn which was not so poetic. After birth, he said, the air acts as a powerful stimulus on the skin, as can be seen from the redness it produces in the skin as soon as the newborn strikes the air.[4] This concept has always persisted and I, myself, was taught, if the baby does not cry right away when it is born, to spray its skin with ether. Everybody is familiar with the gasp that is induced by stepping under a cold shower. This deep inhalation reflex from sudden stimulation of the skin has long been recognized. The first impression of the air upon the lungs of a newborn infant is painful, Rush believed, and hence it cries. It is probable the action of air upon its body likewise excites pain, he went on.[5]

Children, Rush believed, possess great excitability to external stimuli such as light, sound, heat and air, and suffer less from cold than grown people. We can well agree with this last observation when we see our children going bare-legged in winter to school. Animal life, he declared, is supported in infants by their suckling or feeding nearly every hour in the day and night

[4] Adams, *ibid.*

[5] *Med. Inq. & Obs.* 3rd Ed., Phila., 1809, Vol. 1, p. 10.

when they are awake—which affords a glimpse of how our ancestors nursed their babies on demand. Even the babbling of children did not escape him, for he said, "In infancy, new impressions, motions and speech act as stimulants so that we always find children full of motions and conversation more than any other time of life." In old age he cited the love of grandchildren as an internal stimulant sustaining life as a substitute for the lack of external stimulants. Laughing and crying are universal in infancy and promote life with considerable influence upon health. So it is as possible for a child to cry and grow fat as to laugh and be fat. As for dreams, these cause children to smile, start, or occasionally scream in their sleep, but he never mentioned the pavor nocturnus or night terrors the old textbooks always included.

He was a firm believer in heredity, and it was axiomatic to him that a child born of healthy parents brings into the world a system formed by nature to resist the causes of disease. In his praise of mother's milk, he pointed out that the Indian child generally sucked until the age of two so that it was easy for him to conceive how much vigor their bodies must acquire from what he considered simple but wholesome nourishment, but he differed with Jean Jacques Rousseau about the enviable health of savages and the advantages of primitive life. Discussing diet and nutrition, Rush said that children require more food in proportion to their age than adults, and he always recommended the liberal use of sugar in the diet of children. He had an idea that gastric juice in children was more active during digestion in order to make up for the defect of mastication, a notion that may have occurred to him as a result of his active interest in the subject of gastric digestion during his student days, an interest which led to a number of research investigations at the University of Pennsylvania into this subject by some of the medical students there who then made use of their findings to write their graduation theses. Rush taught the ancient doctrine that meat was harmful to children before they have teeth to divide it. He did not venture to hazard a guess as to whether sexual intercourse harmed the mother's milk but he seems to have felt he should bring it up, for it was a tenet universally held by all authors before him.

He was a strong advocate of the use of a wet nurse when necessary and urged the delicate woman "to snatch her offspring from her own breast and send it to repair the weakness of its stamina with the milk of a ruddy cottager." He was a big city doctor and encountered many such "delicate" women in his practice. Regarding Rousseau's campaign for maternal nursing, he declared, "There has been much commonplace declamation against the custom among the great of not suckling their own children." But while acknowledging this practice to be beneficial where it was customary, he was opposed to "a woman whose times for eating and sleeping were constantly interrupted by the calls of enervating pleasures" nursing her own child, because her milk, he believed, would be unwholesome. He therefore concluded that wet nurses are a necessary evil in the "corrupt stages of society."

Rush had many good ideas in regard to public health. Noting how rickets made their appearance in manufacturing towns in England, he urged caution in regard to the kind of manufacturing which should be permitted in the new nation. Since he was a friend of the first three presidents, George Washington, John Adams and Thomas Jefferson, his advice did not go unheeded. However, Rush was quick to add that he would not discourage those manufacturies which employ women and children because he believed they suffered few inconveniences from sedentary life in factories. The nation was young and striving to develop an industrial economy that would render it

independent of Europe and could not yet afford the luxury of the later child labor restrictions.

Rush built a system of psychiatry from his experiences in practice and at the Pennsylvania Hospital. These experiences were fortified by extensive excursions into medical literature and eventually led to his book on *The Diseases of the Mind.* He began his psychological meditations with a paper in 1786 entitled "The Influence of Physical Causes upon the Moral Faculty." This contains some ideas related to pediatric psychology. He urged that even though the cultivation of the moral faculty hitherto has been the business of parents, schoolmasters and divines, it should be equally the business of the legislator, the natural philosopher and the physician. But it has been only a few decades ago that the physician became involved with emotional and social behavior of children. A "physical regimen," said Rush, should accompany moral precepts just as air, exercise and diet generally accompany prescriptions for consumption or gout. In other words, he meant by a "physical regimen" medical supervision.

A peculiar notion he had was that there was a connection between the intellectual faculties and the degrees of consistency and firmness of the brain in infancy and childhood. The same connection, he said, has been observed between the strength as well as the progress of the moral faculty in children. Except for certain organic brain diseases, however, I do not believe any connection between the size or the consistency of the brain and the intellect or behavior has ever been proved.

Pointing out that fear may subdue excitement, or as he said, it "may be useful in abstracting the stimulus of invigorating passions," he gave as an example a child in whom fright had stifled an inflammatory case of whooping cough. That fright could sometimes cure whooping cough was an old idea mentioned by Millar.

He was ambivalent in regard to the effects of the moon on fevers or other diseases, quoting Dr. Jackson and others on the subject and exhorting his students: "I recommend the subject of lunar influence and critical days for your future investigation."

He observed that when an earthquake shook the City of Philadelphia at the end of November, 1796, although scarlet fever and chicken pox (which he considered a species of scarlatina because de Sauvages had classified it as scarlatina variolosa) were prevalent, he could perceive no change in the disease in consequence of the earthquake. Celestial and terrestrial disturbances were considered environmental health hazards, and in 1799 Noah Webster, credulous environmentalist of old, published a two volume *Brief History of Epidemic and Pestilential Diseases with The Principal Phenomena of the Physical World which Precede and Accompany Them,* in which the influence of earthquakes, lunar eclipses and other prodigious events was elaborately documented.

Elsewhere Rush said that children are subject to delirium or acute mania in fevers and that lunar influence must here be allowed as it occurs most frequently at the full and changes. In his book on *The Diseases of the Mind* (p. 168), he went into this subject in much greater detail.

In regard to memory, he mentioned, as an example of mnemonics, a fellow student who never could remember whether the umbilical cord was composed of two arteries and one vein, or two veins and one artery, until he connected the two "a's" as in the latter syllable of Boerhaave's name. As for memorandum books, in the vigor of life, he said, they are like go-carts to children who can walk without them; but they are more useful in old age when there is a decline of memory. He urged that children should be imbued with the virtues of cleanliness because it not only is conducive to health but instills good order leading to so-

briety and attention to duty. Solitude and silence are also conducive to virtue, leading to development of the mind by reflection. In this connection he called attention to Dr. Fothergill, who, at Ackworth, in Yorkshire, where the present school started out in 1759 as a branch of the Foundling Hospital of London, inculcated discipline by habituating the children from early infancy to silence and attention. Clearly, the modern penchant for permissiveness was no virtue to Rush. Kindness to animals was another virtue he extolled for children, for cruelty to animals in youth could lead to murder in manhood. Steady labor in early life also creates virtuous habits; as a case in point he referred to Anthony Benezet of Philadelphia, a wealthy and philanthropic schoolmaster who shared Rush's aversion to slavery and the African slave trade and left a legacy to support a school for the education of negro children. Benezet made it a constant rule, in binding out children to apprenticeships, to avoid wealthy families, and chose masters who themselves worked and who obliged these children to work in their presence. The Bridewells and workhouses of all civilized countries, Rush declared, prove that labor is not only a very severe but the most benevolent of all punishments, in as much as it is one of the most suitable means of reformation. In tune with his time, Rush was not prone to mollycoddle his patients, young or old. When he considered his own delinquent son insane, he confined the youth for the rest of his life to a cell in the Pennsylvania Hospital.

Etiology

There is but one fever and but one disease, Rush proclaimed, but this was merely a play in semantics because elsewhere he went into a lengthy discussion on forty states of fever, obviously influenced by the earlier attempt at classification of diseases by his teacher in Edinburgh, William Cullen. Children, said Rush (following ancient precepts), are predisposed to disease before birth from irregularities of the mother; at parturition, from injuries received, and improper treatment from careless and ignorant midwives, by washing them soon after birth in ardent spirits or soap suds which are too stimulating.

Allowing that children are predisposed to diseases from inadequate supply of milk, or from the milk's not being sufficiently nutritive, he also decried the scanty meals allowed children at the boarding schools and attributed small stature in boys to insufficient food in school.

He still spoke of remote and proximate causes. Worms, he thought, might be a remote cause of disease, but, he said, "I am of the opinion they are useful. Instead of producing disease, they serve to consume the redundant quantity of aliment taken into the stomach of children and only produce disease when in too great numbers." Nevertheless, in a lecture on the "Diseases Peculiar to Children," he listed the following symptoms of worms: apoplexy, epilepsy, hydrocephalus internus, coma, convulsions, griping, attempts to swallow in sleep, difficulty in swallowing, dry cough, sudden starting in sleep, cardialgia, vomiting, frothy expectoration, colic, costiveness, singultus, subsultus tendinum, slimy stools, night sweats, pain in the belly and lying upon it, picking the nose, slow or intermitting pulse, atrophy, sour breath, inordinate appearance of chyle in the urine, a sudden rising or subsiding in the abdomen owing to the liver's being distended and oppressed with blood and chyle (and as soon as the liver has performed its duty and relieved it into the intestines the tumor subsides), a swelling of the alae nasi and upper lip. But all these symptoms, he emphasized, are likely to lead us astray. Only one could be depended on, i.e., to see the worms, and even this is not a sign of their being a cause of disease. From the Indians he got the idea that a discharge of worms in a fever or after certain medicines are the effect, not the cause, of disease. In fact, a discharge of

worms about the time of the crises in fevers he considered a favorable sign.

The smallpox and measles cannot exist together because they both affect the same system and he believed there cannot be two morbid actions at the same time in the same system of the body, a doctrine still taught by William Osler a hundred years later. The proximate cause of a disease, or the disease itself, is the morbid action. He was a little muddled, like so many others before and after him, when it came to distinguishing various febrile disease entities. Leprosy, he taught was once as infectious as any other disease. It occurred in the prepuce, he declared, and was propagated by it; hence, the practice of circumcision commanded by Moses. He may have obtained this notion from some model while witnessing a ritual circumcision, for he had some Jewish patients under his care. Perhaps he and Moses were both unable to differentiate a syphilitic chancre of the prepuce from leprosy.

Rush gathered all cerebral affections under the umbrella term of "hydrocephalic state," explaining that while water in the brain is always the effect of inflammation, there may be morbid action without inflammation. Under this concept he was able to group, under the hydrocephalic state, cerebral affections occurring from contusions, contagions, suppression of accustomed discharges like those from running ears (brain abscess, perhaps?), or running nose, and so on. Among the causes of madness he enumerated onanism, worms, irritation from foreign bodies, certain cutaneous eruptions, severe treatment in the course of education, and heredity. He said madness seldom occurs under the age of puberty but added four of his own cases to the small number on record. One was a child of two that had been affected with cholera infantum, another with internal dropsy of the brain. "They both discovered the countenance of madness, and they both attempted to bite, first their mothers, and afterwards their own flesh." He differentiated febrile delirium from these.[6]

Legitimate or true gout he seated in the ligaments or joints and said it may with propriety be called rheumatism. The remote cause was all that differed. He said that it affects all ages and sexes and that he saw the first attack in children five years old and in men eighty. Evidently he did not distinguish between acute articular rheumatism, gout or any other form of arthritis. He believed it to be a hereditary disease, not from "morific matter," sometimes passing by one or two or three generations and then appearing in the fourth.

Believing the mortality rate from fevers was already diminishing in his time, he predicted "the time will soon come when it will be as uncommon for a person to die of a fever as it is now to die of a toothache." The antibiotics have made his prophecy come true but this was 150 years later. Rush had seen the scourge of smallpox prevented by inoculation; and he could happily tell his students that the proportion of deaths was greater from measles than it was from the smallpox by inoculation. Later he could omit his lecture on inoculation altogether because the universal practice of vaccination with cowpox had rendered it obsolete.[7]

The Diseases Rush Encountered

Thomas Sydenham, who died several generations before Rush was born, revived the Hippocratic method of clinical observation and inaugurated scientific nosography. Separating smallpox, measles and scarlet fever for the first time, he went on to give specific names to different diseases, provided a clinical description for each of these diseases and attempted to lay down a fixed method of cure for each one. Benjamin Rush, calling him "the restorer of medicine," was an ardent exponent of Sydenham's principles, imitating Sydenham by studying endemic and epidemic appearances of diseases, the age

[6] *The Diseases of the Mind,* p. 54.

[7] *Med. Inq. & Obs.,* 3rd Ed., 1809, Vol. 1, preface.

groups involved, the climatic and environmental influences and so on and came to be called the American Sydenham. Rush, like Sydenham, described in particular different epidemics of measles, scarlet fever, dysentery and yellow fever, a disease which Sydenham did not encounter. Greatly influenced also by Cullen, who had published a classified system of medicine like Linnaeus's classified system of botany, Rush attempted a reduced classification of his own, as I have already mentioned. Familiar with the classical work of Morgagni relating pathological findings in various organs of the body to specific diseases, he was not aware of the anatomic system of naming inflammatory conditions after the specific organs involved, which was introduced by the French in his own time, nor did he know of Bichat's dissociation of organ diseases into those of the tissues within these organs. Cellular pathology and microbiological classification of disease entities came long after Rush was gone. However, Rush did attempt to relate pathological anatomy with clinical medicine but only with feeble and ineffective results.

Rush's examination of his patient consisted in obtaining a history of the illness, observing the patient's general appearance, the breathing, feeling the heat of the body, the pulse, examining the tongue, mouth and throat, gross inspection of the urine and feces, and so on. He did not percuss, nor did he ever learn about the stethoscope or any other instrumental device to aid in his diagnosis. He could recognize clearcut clinical differences between a simple bronchitis and an extensive pneumonia and knew the difference between these acute pulmonary diseases and the chronic cases, but was not able to separate lung cancer or chronic pulmonary emphysema from advanced pulmonary tuberculosis, which he was apt to call phthisis or consumption. Several times he mentioned cretins and idiots. In one instance he wrote about a cretin seen by Dr. Michaelis at Passaic Falls, New Jersey, a twenty-six-year-old idiot still in a cradle.[8] Christian Friedrich Michaelis was surgeon to the Hessian troops during the Revolution and later wrote extensively about American medicine, including translations into German of several of Rush's works. Rush also described in minute detail a case of congenital idiocy in an older boy who was apparently also a cretin, whom he visited at Kensington, now a part of the City of Philadelphia.[9]

Rush wrote about tetanus as a disease especially fatal to newborn infants. Among the causes he cited were: (1) cutting the navel string which he said was often done with dull scissors which bruised the cord; (2) acrimony of the meconium retained in the bowels; (3) cold air, and (4) smoke. He thought worms might also be a cause. The disease was known as "Jaw-fall" and especially affected negro babies in the West Indies, but he saw a few cases in white children in Philadelphia and noted Cleghorn said it was common among white children in Minorca. Pointing out the incubation period of from one day to six weeks, he mentioned nuchal stiffness among the premonitary symptoms and believed purging off the meconium immediately after birth often prevented it. Another preventative was to apply a rag wetted with spirits to the cord immediately after it was cut; he noted that the Indians of Cayenne annointed their children daily for nine days with sweet oil to prevent it. Rush's treatment was to evacuate the bowel immediately after birth and apply a spirits of turpentine stupe to the cord immediately after it was cut. He called attention to the need for laryngotomy as proposed by Dr. Physick when the disease took hold of the child.

At The College of Physicians of Philadelphia there are some manuscript student notebooks of Rush's lectures in one of which, written in 1811, there is a section on *Diseases Peculiar to Children* in which he

[8] *Med. Inq. & Obs.*, 3rd Ed., 1809, Vol. 1, p. 54.
[9] *The Diseases of the Mind*, p. 54.

said children sometimes die immediately after birth by suffocation in the liquor amnii and from trismus nascentium. The next condition listed was tongue tie: "Here the ligament under the tongue should be cut with a pair of round edged scissors," he said, between the ages of one and three months. For imperforated bowel he had no remedy to offer. "Red gum" he defined as eruptions and red spots on the skin. William Cadogan, in his classic *Essay Upon Nursing and Management of Children* (1748), attributed this condition to improper medication and said "most children within the first month break out in pimples all over; the nurses call it the red gum, and look upon it to be a natural thing; and that children will be unhealthy that have it not." William Smellie, in his book on midwifery said that the nurses in London called it the red gum but in Scotland it was called the hives.

Spina bifida (Figure 2) Rush also "generally found fatal," although caustics were said to have cured it, he noted.

Aphtha was a fever soon after birth which the Philadelphia doctor said was more fatal in New York than in Philadelphia. "The sea air, I suppose, makes the difference," he explained.

For the milk sometimes found in the breasts of children, he warned, "we should peremptorily forbid their being squeezed." He said "I have seen tumours formed by this means which required extirpation." For "BellyAche," he recommended magnesia, the alkaline salts and laudanum. He pointed out that "it has been proposed to obviate the BellyAche and other diseases of the alimentary canal of children by keeping them free from the breast," but Rush believed this was founded on improper observation and wrong inferences. Cadogan and others attributed infantile colic and bowel complaints to overfeeding and so advised against overfeeding or "spoiling" the child. But Rush disagreed, saying, "Such children as are brought up exempted from the mother's milk are more subject to acute diseases and seldom live long." For costiveness he recommended syrup of rhubarb, corn meal, pap, etc.

As for dentition, he stated that diarrhea, gonorrhea and convulsions sometimes attend this. The remedies he listed as venesection, purges, cool air, laudanum and cutting the gums. To Rush, gonorrhea could indicate any preternatural flux of fluid from the urethra, "with or without libidinous desires," as Cullen defined it, so that he may have meant to include enuresis by this term.

The cure of cutaneous eruptions should be succeeded by purges, and sores behind the ears should not be healed without a substitute for them, or purging afterwards. He still believed with the ancients that blood impurities were purged through the skin as the term eruptions so literally implies. Warts on the side and tip of the tongue sometimes occurred for which the remedy was excision with scissors.

For paraphimosis, which he attributed to "playing too much" with the penis, circumcision was preventive, and the treatment was cold water, gentle taxis on the prepuce, lead water, scarifications, etc. The way to reduce prolapsed rectum is to wrap cloth around the finger, push up the gut to its proper place, and retain it there by astringent applications. Rush also told his students, "Children are sometimes born with risings in their heads from being bruised in coming into this world, or from falls. It has been said to be owing to the bones, but it is an enlargement of the cartilages only and will go off of themselves. When pins are the causes of disease they should be extracted. By walking or attempting to walk too soon children often fall and injure or bruise their heads. A fall on the head should always be attended to. Remedies are venesection, purges and a low diet. They should be permitted to creep before they walk and in that way acquire the use of their hands. After two or three years there is less danger

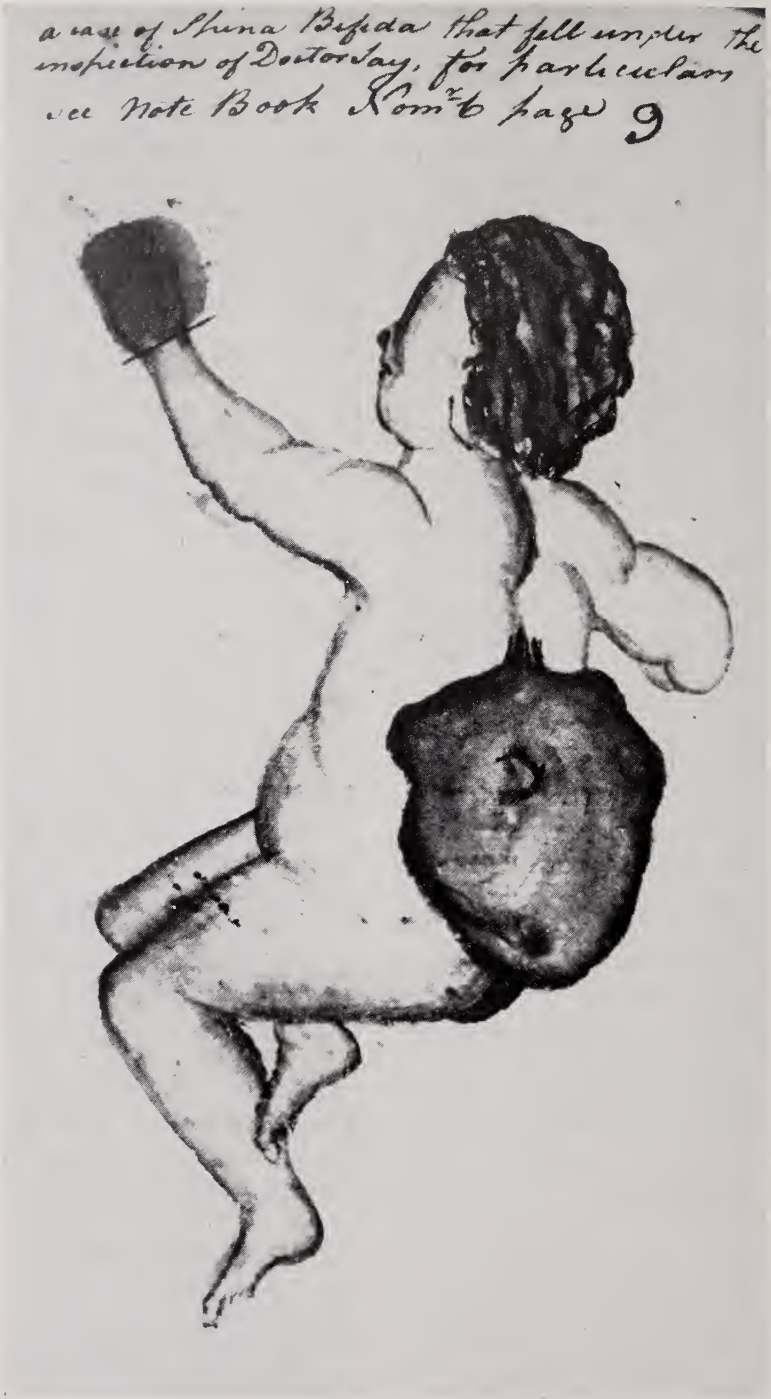


Fig. 2. "Spina Bifida," a drawing in *Notes From Lectures Given by Benjamin Rush,* 1786, by Samuel Poultney. Manuscript in the National Library of Medicine, Bethesda, Md. 20014.

from falls as the bones become much firmer. Injuries to the limbs are seldom dangerous except the hip joint. They should be treated with venesection, purges, etc. All stimulating applications are hurtful. It is remarkable how seldom they die from cherry stones, coffee, etc. which they frequently thrust up the several cavities or openings of the body. They, however, should be extracted." His practice thus differed little from the general run of patients in an ambulatory clinic today, except that he was more likely to treat children at their homes.

For information on cholera infantum he referred his students to his written works. He gave the symptoms of tabes infantilis as paleness, listlessness, vomiting of milk, lientery, inordinate appetite, partial digestion and night sweats, and the Hippocratic countenance. The remedies: bark (quinine), wine, minimal food, cold bath, country air, and exercise. Erysipelas infantilis was also one of the diseases of children which was often fatal and, he said, was mentioned only by Underwood "whose book on the treatment of children should be in the hands of every physician."

Number 27 of his forty different states of fever was the hydrocephalic state, which occurred chiefly in children. Meningitis was not yet a medical term in general use, but internal hydrocephalus, water on the brain, or the term used by Robert Whytt describing tuberculosis meningitis, internal dropsy of the brain, was more popularly used. The water found in the brain Rush attributed to the effects of inflammation, and added to proofs from dissections which he had published elsewhere a case reported by John Redman Coxe, one of his former pupils, in which an autopsy done on a child by Dr. Clark of London revealed an inflammatory crust on the optic nerves to explain blindness in the child.

In *An Inquiry into the Causes and Cure of the Internal Dropsy of the Brain,* Rush stated the disease was confined chiefly to children because the brain is larger in proportion to other parts of the body in children than in adults, so that a greater proportion of blood was sent to it in childhood. The effects of this determination of blood to the brain appear in the mucous discharge from the nose, and in the sores on the head and behind the ears which are so common in childhood. This strange, but ancient, belief, that drainage can take place directly from the inside of the cranial cavity to the outside through the nasal, aural or ophthalmic orifices or even through the pores of the skin had been exploded once and for all in 1660 by Conrad Victor Schneider. Yet Rush apparently was unaware of the fact and still clung tenaciously to this old notion. Skin eruptions, salivary flow, tears, exudation from the ears and nose were all accounted to be healthy evacuations from the brain. In all febrile diseases, Rush held that the preternatural determination of blood to the brain in children led to the convulsions in smallpox, dentition, worm diseases and fevers in general. Number 38 of his forty states of fever was the convulsive or spasmodic state, and it is well known, he declared, that convulsions often usher in fevers, more especially in children. But the small boils and other skin eruptions which were number 40, so common among the children in Philadelphia at the time of the cholera infantum (that is, the summertime when prickly heat is so common as well as the summer diarrheas), were beneficial and these children always escaped the summer epidemic.

Rush referred to the writings of Robert Whytt, John Fothergill and Charles William Quinn, in particular the latter, who wrote a treatise on the *Dropsy of the Brain* in 1790, which he said accorded most with the disease as it occurred in the United States. Rush saw the disease even in a child of six and noted how often sudden death occurred, in which case, he said, Maxmillian Stoll called it "apoplexia infantilis." In examining the brain of a negro

girl of nine who died of the disease, Rush measured one gill (4 oz.) of water in the ventricles.

The causes he presented were trauma to the head, fevers, including typhus, pulmonary consumption, eruptive fevers (mentioning a case of his own from measles), worms, even after the worms have been discharged from the body, and he included one case produced by the action of the "vernal" sun. Thus, he included under the category of internal dropsy of the brain not only acute bacterial meningitis, but subdural hematoma, encephalitis, tuberculous meningitis and even sun stroke. In several places he mentioned what must have been measles as well as mumps encephalitis and, saying that orchitis from mumps could be prevented by a blister applied to the throat, he noted that sometimes the swelling of the testicle is translated to the brain and suddenly kills.

His chief reliance was on phlebotomy in treatment. In 1802, one of his students wrote a graduation thesis on *The Hydrocephalic State of Fever,* copying almost verbatim all that Rush had to say on the subject, even quoting the same references.

Following a pattern set by Sydenham, Rush published accounts of measles as it appeared at different times in Philadelphia. First he discussed climatic conditions and then the salient clinical points. He referred to the paper on measles originally written by John Quier in 1774, published in Donald Monroe's *Letters and Essays* in 1778 and republished in Coxe's *Medical Museum* in 1806 (Vol. II No. IV, p. 365) in which Quier described Koplik spots in the following words: ". . . the most certain diagnostic of the disease in its beginning (and which I do not remember to have found mentioned by any author that I have met with) was the appearance of the *white aphthous specks about the gums;* which are always visible several days before the eruption, and not infrequently before the fever began. By this symptom, I discovered several to be affected with the measles, before they were themselves sensible of any indisposition." Rush seems to have confused this enanthem with other oral conditions he met in children, but like Quier, Rush emphasized that these spots were a sure mark of the approaching eruption of measles. Again referring to Quier's reference to the premonitory eruption of measles as a hitherto unknown phenomenon, Rush asserted he had recorded these in his notebook during an epidemic of 1773, but he never did publish the observation. He also mentioned an aberrant form of the enanthem which he called "the internal measles" to distinguish it from the eruptive form, but it is questionable if any of these cases he described were in fact measles.

Rush mentioned one case in which he attributed the convulsions to a stoppage of a running from the ear. Otitis was a common sequel to measles and brain abscess sometimes resulted. This may to some extent account for the ancient idea that running ears, like running nose or exudative eczema of the head, were salutary ways for nature to purge the brain.

Rush also wrote an account of scarlatina in an epidemic that began among children and spread to adults. The symptoms were chills, nausea and vomiting at onset; the vomiting was so invariably present he considered it pathognomonic. He noted the sore throat, dysphagia and dysphonia and compared these symptoms to those of cynanche trachealis, his name for diphtheria. He also noted the tonsillar exudates and ulcerations, the thick nasal discharge, the swelling behind the ears (which might have been acute mastoiditis), and the variations in appearance of the eruption and in the degree of fever. The disease, he stated, generally went off with a swelling of the hands and feet so that he must have had many nephritic cases which he did not recognize as such. Two cases of what seem to be retropharyngeal abscesses occurred which terminated fatally when the abscesses were

opened. Many cases of sore throat without eruption also appeared in this epidemic.

In 1793 he recorded that mumps and scarlatina prevailed. A boy of seven with the latter disease developed swelling in his limbs with a tense pulse but was cured by vomits, purges and bleedings. In some additional observations on the scarlatina anginosa, he noted there were effusions in some cases not only in the limbs and abdomen, but in the thorax as well. All yielded to purges of calomel and jalap, but if neglected, he said, they proved fatal.

Chicken pox he considered a mild disease. A few cases turned up at this time.

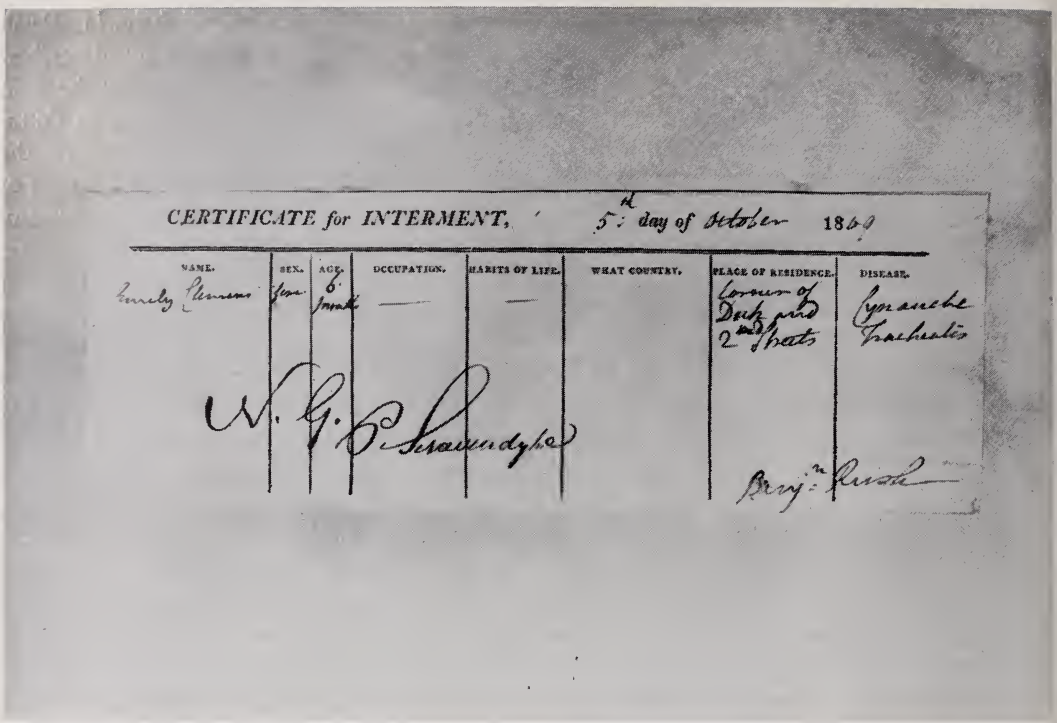
One girl nine years old had an efflorescence on her breast but no other sign of scarlatina until the sixteenth day, when a swelling appeared on the outside of her throat (cervical adenitis?). After her recovery, a pain and swelling appeared in one of her knees.

He concluded that camphor bags, in popular use at the time, possessed little or no efficacy as a preservative against this disease, but thought more favorably of daily washing of hands and face, and gargling the mouth with vinegar as a preventative. A speedy and effective remedy which he credited to Dr. Sims and which could completely check the disease was a vomit of ipecac and a few grains of calomel. A vomit and calomel cleaned the throat as well as the stomach. When it was necessary to restrain the effect of the calomel, he added opium to it. He also employed detergent gargles, steam inhalations and sweats and resorted to blisters behind the ears if the child was not better after three days of this treatment. This site was commonly used for treatment of many conditions. Primerose, writing in the sixteenth century on pediatrics, thought it was because Hippocrates in the sixth book of *Epidemics,* Section 5, text 21, had recommended venesection over the ears in edemas.

In his *Observations on the Cynanche Trachealis,* a term by which he included what we now know as diphtheria, Rush equated it with his previously described spasmodic asthma of children, for he said the common name for this disease in Pennsylvania was "hives," a corruption of the word "heaves," descriptive of the heaving of the lungs in difficult breathing. This use of the word hives for croup apparently has no connection with the same word used in Scotland and Ireland for "blotches" and now used by us for urticaria. The worst degree of cynanche trachealis was called the "bowel hives" because of the great motion of the abdominal muscles in breathing. Other names for the disease were "suffocatio stridula," "tracheitis," "pleurisy of the windpipe," and Dr. Michaelis called it the membranous type "angina polyposa."

The disease was brought on by the same causes which induce fever, especially by cold. It ran its course in three or four days but could be chronic for eight or ten days. He thus included all forms of what we now might call croup or acute tracheobronchitis. Autopsy showed: 1., slight inflammation; 2., thick mucus; 3., membrane; 4., occasionally no findings at all.

Treatment in the forming stage of the disease was puking; "happily," said Rush, "children are seldom injured by a little excess of pukes." He claimed to have prevented the formation of the disease by pukes "many hundred times." Bloodletting was the treatment in fully developed cases. Once he drew 12 ounces of blood at four bleedings in one day in a four-year-old boy; and he mentioned that Dr. Physick bled a three-month child three times in one day. Life was saved in each case! Powerful as the lancet is in this disease, its violence and danger require it should be aided by vomits every day, strong purges, calomel in large doses, which he thought had a specific action against inflammatory disease. Calomel did not cause salivation in children because of its rapid passage through the bowel. He theorized its action was a form of counter-irritation in the bowels, lessening disposi-



CERTIFICATE for INTERMENT, 5th day of October 1869

NAME.	SEX.	AGE.	OCCUPATION.	HABITS OF LIFE.	WHAT COUNTRY.	PLACE OF RESIDENCE.	DISEASE.
Emily Clemens	fem.	6 mont.	—	—		Corner of Dock and 2nd Sts	Cynanche Trachealis

Fig. 3. Death Certificate for a child with Cynanche Trachealis. Reproduced by permission of The College of Physicians of Philadelphia.

tion to membrane formation in the trachea. He was much given to theorization, like so many of his contemporaries, and he believed when death threatened that the doctor should take heroic measures to counteract mortal disease (Figure 3).

Blisters, seneka, snake root, warm baths, laudanum were also helpful. Then he described prognostic signs. Stertorous breathing was ominous; loose cough or an eruption were good signs.

While Rush mentioned smallpox occasionally, his main attention was given to prevention of this disease. In a lecture on "A New Method of Inoculating for the Small Pox" in 1781, he sang the glory of how smallpox had been checked and subdued; yet he admitted there was room for improvement. Accordingly, he went right ahead to tell his students how to improve medical science's first triumph over a disease. In infancy, he preferred the periods before and after dentition to inoculate, but admitted there was little inconvenience from inoculation in children between the ages of three months and two years. Under four months, natural immunity often prevented success in variolation. But when it was successful, the symptoms were more moderate than at any future period of life. Even whooping cough and pregnancy, he pointed out, were not contraindications to variolation. That smallpox inoculation did not prevent other diseases was illustrated by the fact that he saw most alarming complications of the smallpox and measles taken in succession to each other in the same persons. He objected to inoculating children in warm weather because they are more subject to a disease of the bowels in warm weather, i.e., to diarrhea. He advocated the left arm and objected to the legs as the site of inoculation, and advised against the use of medicine in preparing the child for inoc-

ulation, saying it will be sufficient for the mothers and nurses of infants to conform strictly to a vegetable diet. "I have never seen any advantage from giving them even a single dose of physic," he averred. Apparently purges were not included in his interdiction of medicines because he urged that the doses of the purges should be carefully adjusted to the age of the child. Fat children, he said, bear the small pox by inoculation more favorably than others. Gentle laxatives were sufficient to keep the bowels open in children.

Since it was necessary to use an active case of small pox for the transferral of the virus by inoculation, Rush pointed out the distinctions between chicken pox and small pox so that no mistake should occur. The matter for inoculation, he emphasized to his students, must be obtained from a patient with true smallpox.

In an extended discussion on treatment during the eruptive phase of inoculated smallpox, he mentioned that African mothers rubbed their children, who had confluent small pox, all over with pepper and plunged them immediately into a spring of cold water. As an advocate of cold bathing himself, he considered this an exemplary mode of treatment.

The most alarming symptom, he said, was convulsions, to which children are subject during the time of dentition. Cool air is the best preventative, and while putting the feet in warm water is good treatment, exposure to open air is best. The colder the air, the quicker the relief. A few drops of laudanum would then prevent recurrence of the fits.

As for the inoculation sore, cold water was all that was needed. He urged the advantages of inoculation but noted that in 1793 several cases of obstinate erysipelas succeeded inoculation in children, one case proving fatal. In a letter to a friend he was able to exult in 1775 that "there is now a society established in the City of Philadelphia for inoculating poor children. It consists of twelve managers and eight physicians." [10] By 1801, however, Jennerian vaccination had replaced variolation as the preferred prophylactic against smallpox and Rush could then write to his friend, Thomas Jefferson, on November 27, 1801: "Vaccination, as you have happily called it, has taken root in our city and will shortly supercede the old mode of treatment." [11] Later he could tell his students that vaccination may be performed at all ages and at all seasons. He even believed it had some curative effect over whooping cough and tetanus. Whenever a new remedy proves effective in one condition there is a wave of enthusiasm for it in other conditions. Frequently, vaccination failed to take hold, especially in children suffering from the itch, and scabies was very prevalent in those days. Rush concluded that the sulfur used in the treatment of scabies destroyed the vaccine virus. To Rush the word "virus" did not convey the idea of a living microorganism, but rather it was more akin to our word "poison." Soon vaccine physicians were appointed in the city and it became their responsibility to keep on hand a supply of potent vaccination scabs.

Writing about pulmonary consumption, he said that while authors fixed the period of life affected between the 18th and 36th years, it was well known that it sometimes appeared in children. Among the remote causes he enumerated scrofula, measles and the sudden growth that takes place about the age of puberty. He went to great length to extoll fresh air and exercise as the best treatment, and he thought weakly children should be trained to the laborious, and robust children to the sedentary, occupations. From the neglect of this, many hundred apprentices to tailors, shoemakers, conveyancers, watch makers, silversmiths and man-

[10] *Med. & Phil. Communications* 1775, Vol. 3, part 1, p. 104.

[11] Butterfield, L. H., *Letters of Benjamin Rush,* 1951, Vol. 2, p. 840.

tua-makers perished every year by consumption.

Whooping cough, he believed, affects the lungs with a convulsive cough. A Latin name for the disease was tussis convulsiva.

Influenza he considered the most contagious of all diseases, and he wrote that in 1780, when the spring was dry and cool, a catarrh appeared among children between one and seven years of age accompanied by running nose and eyes, cough, dyspnea like the cynanche trachealis, and in some like pneumonia. Exacerbations of fever were always attended by cough and dyspnea. Some had swellings behind the ears, some had small ulcers in the throat. Practically all recovered spontaneously. Clearly these were cases of what we now might call common colds or respiratory tract infections which Rush was apt to diagnose as catarrh. During July and August that year, vomiting and diarrhea prevailed universally among children, and this was attended with an uncommon degree of mortality. The prickly heat was very common, and in the 40th state of fever he included skin eruptions such as boils, carbuncles and the like to which children were especially subject. He also noted that "muschetoes" were uncommonly numerous, a certain sign, according to Lind, of an unwholesome atmosphere. It was at this time, also, that he described an epidemic of dengue. He saved the life of a ten-year-old boy suffering from dengue fever, when delirium and coma had set in, by the early application of a blister to the neck.

Rush paid little attention to dentition, mentioning it here and there casually. He accepted the belief, which was general since it was promulgated by Hippocrates, that dentition was accompanied by many diseases, especially convulsions, but found that children of healthy parents rarely suffered from dentition, noting this particularly among the presumably hardy Indians.

He devoted much more attention to worms in children and spent half of his lecture on "The Diseases Peculiar to Children" on this subject. He thought they served a useful purpose in the animal economy since they exist so often in the body without producing disease of any kind. Perhaps they exerted a good effect by consuming the superfluous aliment which young animals are disposed to take, he reasoned, since worms were seen in the most vigorous children of the grossest habits, whereas the most powerful anthelminthics do not bring forth any worms from weakly children. Perhaps the children were weak because they did not have worms, he mused, and so anthelminthics act as tonics to render the bowels more quiet and comfortable and a better asylum for the worm, thereby preventing the crapulas. All children are disposed to crapulas, that is, to a surfeit or excess of food intake, and sometimes children may actually be disordered from want of worms. Thus, he said, nature cures evil by evil.

But he confined the salutary office of worms only to the round worms which were the ones which occurred most frequently in children. He did not believe in so-called "worm-fevers" and thought hydrocephalus interna (i.e., meningitis) might have accounted for many cases of worm fever. He supported Cullen's views that worms caused the neuroses, saying there is scarcely a disease or a symptom of a disease belonging to this class which is not produced by worms. Then he said that the chronic and nervous diseases of children are numerous, frequently fatal and often caused by worms, and cited William Hunter and William Butter in support of this statement. Therefore, he concluded, there was no great danger in prescribing anthelminthics in the first attempts to cure the chronic and nervous diseases of children.

He could not find any symptoms which could distinguish one species of worm infestation from another. Thus a girl of twelve who discharged four yards of taenia in a

fever had no symptoms related to the worms except occasional slight stomach pains which he assumed were common to young girls from a sedentary life or dietary errors. All the symptoms attributed to worms, even picking the nose, are not indicative of worms at all. The only conclusive sign is the actual discharge of worms; that, he said, is pathognomic. He himself performed a series of in vitro experiments on the effects of various commonly used materials upon earth worms. These were the nearest to the human round worms he could secure. He tabulated his results on three printed pages, pointing out, at the same time, the shortcomings of in vitro studies. Common salt, ripe fruits and sweet substances, which children like so much, were the most speedy and effective poisons against the worms. Salt had been recommended by Celsus eighteen centuries before and was still a popular folk remedy in Ireland. Rush used it effectively in many cases. He also recommended sugar, molasses and other sweet substances in the diet of children, believing sugar and molasses in large quantities would dislodge worms from the stomach. This was contrary to the general belief that worms are generated by sweet food. He also used gunpowder as a remedy, attributing its effect to the nitre contained in it.

Rush listed the parasites as tapeworms, round worms and "ascarites," the last being the thread worm or maw worm, or as it is now often designated, the pin worm. The round worms were those he commonly found in different parts of the alimentary canal and stomach. The worms themselves, or eggs capable of breeding worms, he taught, are conveyed into the stomach by way of the mouth with the food.

Rush became especially famous as a physician during the yellow fever epidemic of 1793. He stayed at his post even when he was himself a victim of the disease, and he claimed to have saved hundreds of his patients. Desperate diseases required heroic treatment, and his daring methods brought on much controversy in his time and the rebuke of modern historians. The first patient he saw in this epidemic was Dr. Hugh Hodge's child who had a fever of the bilious kind which terminated with a yellow skin two days later. From then on he saw more and more yellow fever patients, many of them children who died. In a dispute concerning the origin of the disease, which he attributed to effluvia from some putrid coffee rotting on a wharf, he resigned from The College of Physicians of Philadelphia. Discussing the slow pulse of yellow fever, he noted that a slow and intermitting pulse was more frequent in children than in adults and ascribed this slowness to an affection of the brain which he believed was an inflammatory state of the internal dropsy of the brain and suggested it be called the "phrenicula." By this he evidently implied that the slow pulse of jaundice indicated encephalitis or meningitis. He set Dr. Coxe, when Coxe was one of his pupils in residence, to watch the eyes of his patients for two days and thus discovered pupillary changes which convinced him there was brain inflammation. He also noted squinting and declared that dilation and squinting marked a high degree of a morbid affection of the brain. But he also suggested the slow pulse was due to a spasmodic affection accompanied by preternatural dilation or contraction of the heart. From an analysis of his further discussion of the subject we might conclude that he saw cases of heart block as well as extrasystoles possibly of rheumatic fever which he included in his analysis of the bradycardia of jaundice. He designated the jaundice pulse as "the undescribable or sulky pulse." What he described as a "hobbling" pulse may have been fibrillation. He said it was an alarming symptom.

In regard to the pathological changes of yellow fever, he recorded the dissection of

the brain of a child that died with all the symptoms of hydrocephalus internus (i.e., meningitis), yet nothing was discovered in the brain but a slight turgescence of its blood vessels.

Among his patients in the epidemic of 1793 he mentioned a child of four months, and another, moderate case in a child only ten weeks old who had caught it from her mother and who had deep yellow skin. Both these children recovered. To determine the relative frequency of the disease among children he counted the graves in the Swedish church yard. There were seventy-five persons buried during the four months of the epidemic of whom twenty-four were children, buried chiefly in September and October, months in which children generally enjoyed good health in our city.

"An Inquiry into the Cause and Cure of the Cholera Infantum" by Benjamin Rush bestowed on the summer diarrhea of children a name which endured in this country throughout the entire nineteenth century. In Philadelphia during Rush's time the malady was called "the vomiting and purging of children," or "the disease of the season," because of its regularity in appearing during the summer months. Later it was to be called "the summer complaint of children." It prevailed in all the towns. In Charleston, South Carolina, it was called "the April and May disease." Rush associated it with the hot weather and with the age period from two weeks to two years. It could be fatal, he warned, as fast as twenty-four hours, but could continue for six to eight weeks, in which case extreme emaciation, which he labeled elsewhere as tabes infantilis, ensued. He discarded dentition as a cause, as well as worms or fruits, and considered it rather as a modified form of cholera or the remitting fever of adults. Cholera and typhoid, however, could only be clinically differentiated years later when the science of bacteriology was developed.

Rush began his treatment of diarrhea with evacuation of the bowels, opiates, demulcent and diluent drinks, fluid enemas, plasters and stupes to the abdomen, and tonic and cordial medicines. The best cordial, he believed, was claret or port wine in water which was especially good for this stage of the disease. Wine was also good, in his opinion, in the bath water. In spite of his strong temperance leanings, he was convinced of the value of wine in infants and in a long, endearing letter to his wife, dated July 30, 1779, written while he was away serving in the Revolutionary Army, he worried about the summer complaint prevailing in the city and urged her to give their babies some wine daily as the surest means to keep them well at that time of the year. "Take care of the children's health this damp weather," he wrote. There were two babies at home by this time. "A teaspoonful or two of old sherry every day will not hurt them. Don't let them breathe the evening or morning air outdoors, and by all means keep a small fire in your common sitting room in rainy weather. These precautions will preserve them and you from the intermitting and remitting fever." The use of dilute wine in children was advocated by Hippocrates, and the Father of Medicine still exerted a strong bias on the mind of Rush.

Cold baths were helpful if the prejudices of the parents could be overcome. But sad to say, and he did not often say this, all treatment was frequently without effects. His chief reliance was placed upon country air, although the country air in that part of Philadelphia called "The Neck" was too unhealthy. I, myself, can remember when this section of our fair city still reeked with the pungent odor of piggeries. Children were taken to the country every day, and even on boats during the daytime, to escape the obnoxious atmosphere of the cities in summer time. This was carried out until well into the twentieth century, until after World War I, in fact, when fluid replace-

ment therapy became the basic form of treatment.

To prevent cholera infantum, Rush advocated daily cold baths, clothing proper for the season, salted meat in the child's diet and the use of sound old wine during the summer months. Cleanliness and removal of children to the country before warm weather arrived were other recommendations he made.

In his *Account of the Bilious Fever in 1795 and 1796,* Rush again noted that cholera infantum was severe and fatal in July, 1795. He asserted that it yielded to blood-letting in a child which was but four months old. In another child only seven weeks old which came under his care he observed the coldness, chills, hot fits and remissions of the bilious fever to be as distinctly marked as ever seen in adults. In a third child, five months old, he noted that the discharges from the bowel were black. From cases such as these, he concluded that the cholera infantum was a bilious fever and that it rose and fell in its violence with the bilious fever of grown persons. In short, what he seems to have been saying was that it was the same disease in infants as it was in adults. The Greek word "choler" is identical with the Latin "bile" and it was Celsus about 30 A.D. who explained that cholera owed its name to the vari-colored or bile-like appearance of the watery discharges from the bowels. Rush merely labeled the disease in infancy with a name and by so doing endowed it with a degree of specificity as a pediatric entity. Without the benefit of microbiology, he could not identify specific cases as they occurred sporadically. So it is that when in the Spring of 1796 a little girl of five years of age died of a bilious fever and became yellow two hours after death, his final diagnosis was changed from cholera infantum to yellow fever.

Rush is notorious for the extravagant use of blood-letting in his practice. He maintained that no age of the patient should prevent the use of the lancet and said that Dr. Physick even bled a child of three months three times in one day. This was in sharp contrast to ancient teaching which was much more conservative regarding venesection in infancy. Indeed, Rush insisted that infancy and childhood are so far from being an objection to bleeding that the excitable state of the blood vessels in these periods of life render it peculiarly necessary in the inflammatory diseases. Dr. Sydenham, he said, bled children in whooping cough and in dentition, and so he followed this practice, bleeding as freely in the inflammatory state of fever in infancy as in middle life. He bled his eldest daughter when she was but six weeks old for convulsions brought on by an excessive dose of laudanum given to her by her nurse; and he bled his youngest son twice before he was two months old for an inflammatory fever which fell upon his lungs and bowels. In both cases he was sure life was saved by this remedy. It is clear that children did survive his heroic treatment of high fevers.

Defending blood-letting during menstruation, he revealed that his reasoning was founded upon Hippocratic, Galenic and Arabic theories, for, in accord with this ancient logic, he argued that the system during menstruation is plethoric and disposed to a violent degree of inflammatory fever from the causes which excite it, so that bleeding is indicated more in an inflammatory state of fever at this time than at any other. Formerly, he continued, the natural discharge from the uterus was trusted to remove a fever during the time of menstruation, but what relief can discharges of four or five ounces of blood from the uterus afford in a fever which, he felt, requires the loss of fifty, or perhaps a hundred, to cure it? To him, therefore, bleeding by the physician enhanced nature in its cleansing or purging of the blood from all those foul corruptions Rhazes and his Arabic successors always talked about.

In eruptive diseases, bleeding was especially advisable, according to Rush, and he told of bleeding a boy with smallpox five times to a total of fifty ounces. He also told of Louis XIV who at thirteen was bled five times in the smallpox; thereby his life was saved, to the great honor and emolument of his physicians.

Rush also used calomel and jalap, as well as other mercurials and cathartics. These were intended to cleanse the system just as was bleeding. So, too, the use of blisters, in producing exudation, was a purging remedy, strange as it seems to us, for such exudations also cleansed the system of corruptions.

A Dinner Party to Honor the First Woman President of The College of Physicians

To honor its first woman president in its 185-year history, The College of Physicians of Philadelphia issued invitations to a formal dinner at the College on October 20, 1972. The dinner was greatly oversubscribed, as only three hundred Fellows and guests could be seated in the candlelit Mitchell Hall. Cocktails were served in the reception hall prior to dinner.

Arrangements for the invitations and dinner were made by the Women's Committee. Mrs. John H. Gibbon, Jr., was chairman of the sub-committee which planned the evening.

After dinner, Dr. John P. Hubbard, vice president of the College, served as toastmaster and introduced a series of friends and admirers of Dr. Sturgis, who made testimonials to her past accomplishments.

Dr. Katharine R. Sturgis, first woman president of The College of Physicians, steps into a landau to ride to the dinner in her honor. Dr. Samuel B. Sturgis escorts his radiant wife.

"Picture Maly and Jack Gibbon, Sam Sturgis and your president driving out Walnut Street leisurely through the early evening in the Empress Eugenie's landau. Mark Allam in top hat held the reins of May and Queen, the two New Bolton Center carriage horses. Leroy Bruce, also in top hat, superintendent of the New Bolton Center farms, sat beside Mark, and the uniformed footman was Henry Allen, D.V.M., a second year resident in pathology." So wrote Dr. Sturgis to the Fellows about the carriage ride from the home of Dr. and Mrs. Frank Elliott, the old Reynolds-Morris House in Society Hill through Center

"The distinguished past presidents greeted us and escorted us over the red carpet that stretched from the sidewalk to the foot of the marble steps. Cinderella indeed!" In a November letter to the Fellows, Dr. Sturgis described her reception at the October banquet. Front row: Past Presidents T. Grier Miller, John H. Gibbon, Jr., President Sturges, Past Presidents Richard Kern, Francis Wood, Jonathan Rhoads. Second row: Past President George I. Blumstein, Vice President John Hubbard.

Dr. Marion Fay, president emeritus of Woman's Medical College, gave the first tribute to Dr. Sturgis. She recalled the medical school career of Dr. Sturgis and the fact that it was interrupted by tuberculosis. At Woman's Medical College, Dr. Sturgis became professor and chairman of the Department of Preventive Medicine.

Dr. Peter A. Theodos, president of the Philadelphia Tuberculosis and Health Association, outlined Dr. Sturgis's career in the field of chest diseases, as president of the Tuberculosis and Health Association, president of the Pennsylvania Thoracic Society, vice president of the American Thoracic Society. In her many roles in this field, Dr. Sturgis has earned several awards.

Dr. Esmond Long emphasized Dr. Sturgis's contributions to research, especially as director of the Philadelphia Pulmonary and Neoplasm Research Project, which demonstrated the correlation between smoking and lung cancer.

Dr. Alfred Stumpe pointed out that Dr. Sturgis served as the first woman president of the American College of Preventive Medicine. She also served as editor of the *Archives of Environmental Health.*

Dr. Elizabeth Rose emphasized Dr. Sturgis's role as a teacher. Dr. Sturgis was visiting chief of the Division of Chronic Chest Disease at Philadelphia General Hospital and served as a consultant at the Woman's Medical College Hospital and the Veteran's Administration Hospital.

Dr. Brooke Roberts, president of the Philadelphia County Medical Society, described Dr. Sturgis's accomplishments as the first woman president of the Society in 1968.

Not shown is Dr. Robert Cohen, who mentioned that Dr. Sturgis was the first woman member and the first woman president of the Laennec Society in Philadelphia.

Mrs. John H. Gibbon, Jr., used photographic slides from "Dr. Sam," written by Dr. Katharine Sturgis and published serially in the *Archives of Environmental Health,* to tell the life story of Dr. Samuel Sturgis, Dr. Katharine's husband, who is Honorary Director of the Department of Medical Arts of the College.

Oldest Fellow of the College, Dr. Claude P. Brown, celebrated his 97th birthday (October 24) at the banquet as the guests sang "Happy Birthday."

Graciously acknowledging the tributes, Dr. Katharine R. Sturgis recalled that she had received her medical diploma in Mitchell Hall of the College thirty years ago.

In her November letter to the Fellows, Dr. Sturgis said, "Gee Elliott, Maly Gibbon, Dee Hubbard, Rita McClenahan and the other members of the Women's Committee did a stunning job. John Hubbard, the handsome toastmaster, introduced the speakers—Marion Fay, Peter Theodos, Esmond Long, Alfred Stumpe, Elizabeth Rose, Robert Cohen and Maly Gibbon. Everyone—Bobbie and Bob Michael, Ted and his staff, Evelyn Huber and Cecelia Murphy, Betty Moyer and McD—all outdid themselves. To each of them, and the more than 300 who attended, thanks, thanks, thanks."

A Wine-Tasting Party: Sesquicentennial Celebration of the Birth of Louis Pasteur

On September 27, 1972, The College of Physicians celebrated the 150th anniversary of the birth of Louis Pasteur by giving a wine-tasting party. Co-hosts at the affair were the Alliance Francaise de Philadelphie and the Eastern Pennsylvania Branch of the American Society for Microbiology.

Homage to Louis Pasteur (1822–95)[1]

By JAMES E. PRIER, PH.D.[2]

TOWARD the end of the last century a distinguished scientist said to an assembly of foreign and domestic dignitaries, "My invincible belief is that science and peace will triumph over ignorance and war, that nations will unite, not to destroy, but to build, and that the future will belong to those who will have done most for suffering humanity". These were the words of Louis Pasteur on December 27, 1892. And they could have been spoken today, in truth and in context.

It might be suggested that the wisdom, energy and scientific genius of Pasteur made him a man for all times—that his greatness would be manifested as a contemporary, just as it was a century ago. But I doubt that this is true. Rather, he was both the product of his time and specifically suited to problems and challenges of that era. The problems of science in the nineteenth century, economic pressures of a nation, and a peculiar emotional response to the physical sufferings of man and animal life formed the composite that influenced the deeds of the man. Secondarily, a basis was provided for a science to be developed and the future of human life to be influenced.

There is some difficulty encountered in attempting to envision Louis Pasteur as a man of our generation. It is doubtful that an accomplished chemist could stride across one of our university campuses tomorrow and find any type of reception in the local medical institution that would allow him, capable or not, to engage in work that would result in a major discovery in clinical medicine. In 1875 Pasteur was rejected by much of organized medicine. Today he would be totally barred and banished. In the nineteenth century, his writings and lectures were severely criticized, whereas in the 1970s, there probably is not an editor to be found with enough scientific insight to publish material of comparable worth. I can imagine the reaction of a reviewer of today perusing Pasteur's description of his studies on anthrax or rabies, with no references and previous citations to substantiate his hypotheses!

The self-imposed regimentation and compartmentalization of today's science would be totally incompatible with the personality of a truly independent investigator of the nineteenth century. It is impossible to conceive of a physical chemist applying success-

[1] Sesquicentennial Celebration of Pasteur's birth, The College of Physicians of Philadelphia, 27 September 1972.

[2] President, Eastern Pennsylvania Branch, American Society of Microbiology; Adjunct Professor of Microbiology, Temple University School of Medicine, Philadelphia, Pennsylvania 19140.

fully to a Federal granting agency, here or in any other scientific community, for funds to support a study on an important project in clinical medicine. The policies and politics of research funding and the stultifying atmosphere of academic bureaucracies would all be inconsistent with the requirements of an independent scientist of a century ago. If Pasteur were to achieve greatness now, it probably would be in an entirely different field of endeavor.

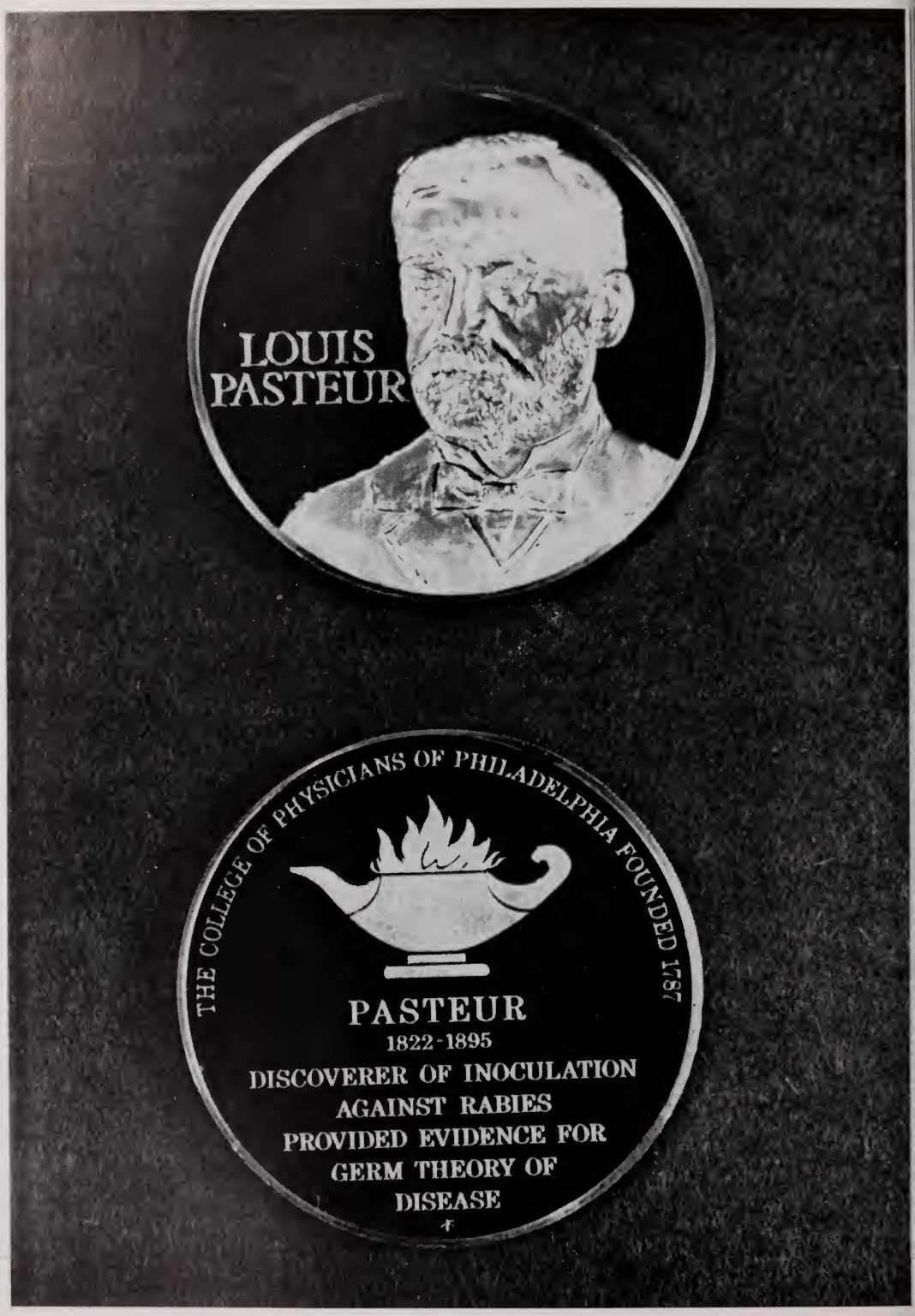
Whether by chance or by divine guidance, it is fortunate that Louis Pasteur was a child of the last century. Had this not been so, microbiology and all the practices affected by it might still be floundering in a morass of ignorance. For it was not only the discoveries he made and the developments he pursued that set a basis for progress in generations to follow. More than this, he provided theories and a system of scientific logic that have formed a pattern of study for nearly a hundred years.

Of Pasteur, the man, only his own words and his biographers' stories are available for evidence. Whether his greatness derives from scientific genius or from the soul of a humanitarian is difficult to know. He conquered the adversities of life and bent his allotted time to his own will, which is a rare achievement for any man. There is no doubt that he was fiercely devoted to his science, his God and his country. But he once said, "Science knows no country, because knowledge belongs to humanity, and is the torch which illumines the world."

Seventy-seven years ago, on a bright September morning he quietly surrendered his life to the ages. And his heritage was this: the wisdom of his mind, born of his care for mankind, and the results of his extraordinary labors left to us all.

Three hundred Fellows of the College, microbiologists, members of the Alliance Francaise and their guests attended the wine-tasting party. Wines and cheeses of various regions of France were served, which emphasized the regions where Pasteur lived and worked.

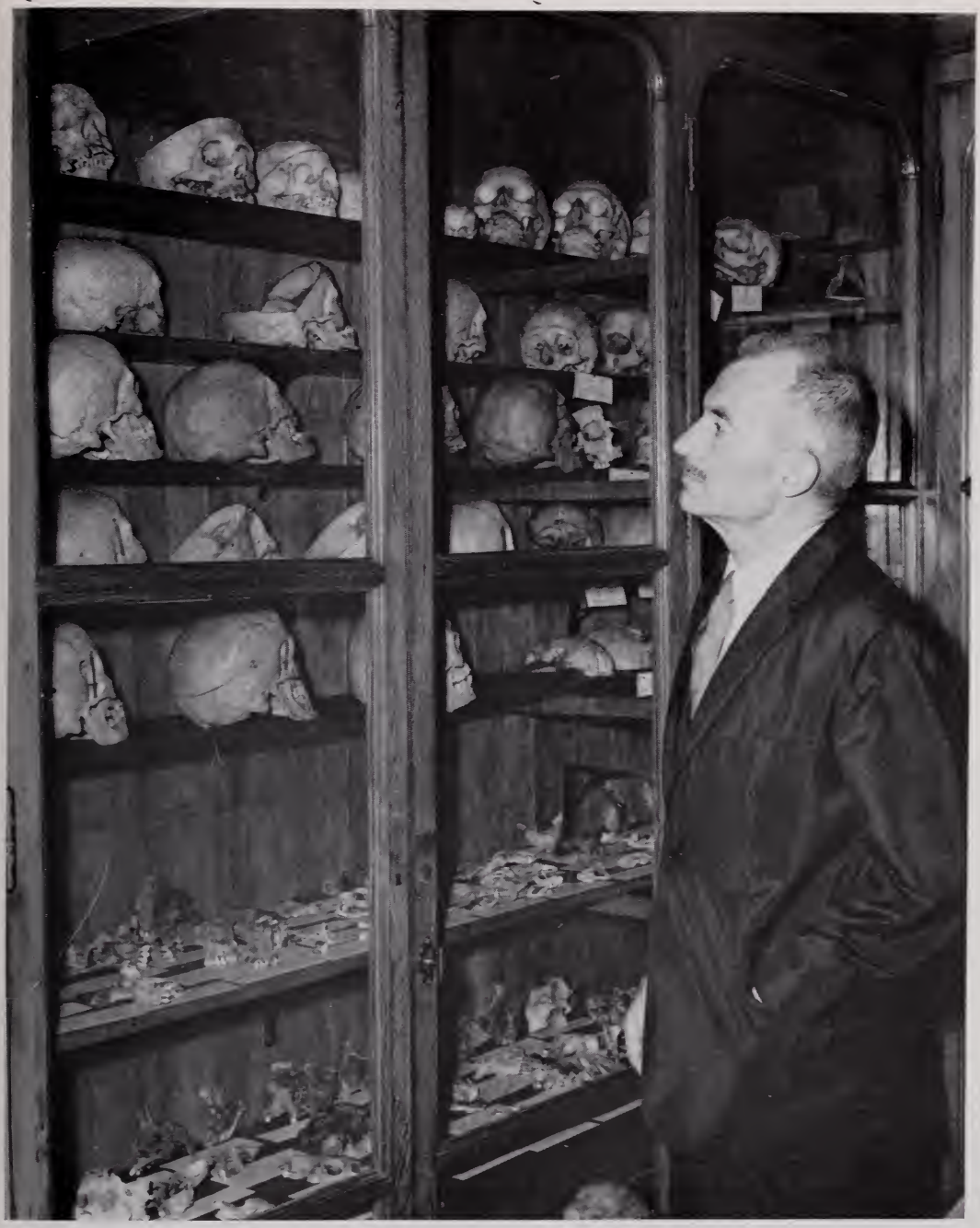
Dr. Katharine R. Sturgis, president of The College of Physicians, toasts the memory of Louis Pasteur as she welcomes Mr. John W. Fawcett, III (left), Honorary French Consul in Philadelphia, and Dr. Dominique L. Sterin, of the French Embassy Scientific Mission, Washington, D.C.



Medal struck by the Franklin Mint to commemorate the 150th anniversary of Pasteur's birth. The lamp of learning on the obverse is derived from the one on the seal of The College of Physicians.

Dr. James E. Prier (left) watches as Dr. Gonzalo E. Aponte gallantly assists Dr. Katharine R. Sturgis to the platform. Dr. Prier, president of the Eastern Pennsylvania Branch of the American Society of Microbiology, presented an homage to the great physician and scientist who is credited with saving the wine industry of France.

Mrs. Emile C. Geyelin (left), former president of the Alliance Francaise de Philadelphie, admires the Pasteur anniversary medal with Dr. Sturgis and Dr. Aponte.



During the party, Dr. Paul Tessier, prominent French plastic surgeon, inspected the Matthew H. Cryer Collection on the internal anatomy of the face in the Mütter Museum.

Dr. Gonzalo E. Aponte (left) served as chairman of the committee which made arrangements for the party. Here he chats with Dr. Katharine R. Sturgis and Dr. Paul Tozier.

A Profile: New Executive Director

Mr. F. Robert Michael assumed the duties of executive director of The College of Physicians of Philadelphia on October 1, 1972. He succeeds Mr. Charles E. Ingersoll, who has left the post to become president of Children's Hospital of Philadelphia.

The selection of Mr. Michael was made by the Council of The College of Physicians upon recommendation of a search committee headed by Dr. John P. Hubbard.

In addition to his job as executive director, Mr. Michael will serve as the College's representative to the Council of the Greater Philadelphia Cultural Alliance, to the Advisory Committee of the University City Science Center and the Museum Council of Philadelphia.

In addition to having a bachelor of arts degree in English and a bachelor of science degree in Electrical Engineering, Mr. Michael has a master of science degree from the University of Pennsylvania and has done doctoral studies at New York University and the University of Pennsylvania.

He has published papers in the fields of computer reliability and computer opera-

Toasting The College of Physicians, Dr. Edward C. Rosenow, Jr., President Katharine R. Sturgis and Mrs. F. Robert Michael (left to right) join Mr. Michael (right), new executive director of the College.

tions and has patented devices for improving computers.

His most recent post has been as Director of the Resident School for RCA Institutes, Inc., where he was responsible for a college level school of 3500 students and 80 faculty members. From 1954 to 1970, he was employed by Bell Telephone Laboratories as a technical supervisor of the computation center and as department head in education and training. From 1952 to 1954, he was employed by the Burroughs Corporation as a group supervisor for computer component reliability. From 1948 to 1952, he was a research supervisor for computer design at the Philco Corporation.

He began his career as an instructor and research assistant at the Moore School of Electrical Engineering, University of Pennsylvania, from 1943 to 1948.

Mr. and Mrs. Michael have a professional interest in eighteenth-century furniture, glass and porcelain. Mr. Michael serves as president of the New Jersey Historical Drama Association.

Mr. Michael is married and has two sons and four daughters. He and his family live in Princeton, New Jersey.

A New England Tour

THE Women's Committee of The College of Physicians has planned a tour of New England on Memorial Day weekend, May 25 to May 28, 1973, which will benefit the College.

The cost of the tour is $175.00 per person (double occupancy), with a $35.00 supplemental charge for single occupancy. In addition, a donation of $50.00 must be made to The College of Physicians.

Reservations may be made by sending a deposit check for $50.00 to Travel Anywhere, 220 Chancellor Street, Philadelphia, Pennsylvania 19106 (WA 5-2123). The donation check for $50.00 may be made payable to The College of Physicians and must be mailed prior to May 1, 1973, to Mrs. Frank G. Elliott, Chairman, Women's Committee, The College of Physicians, 19 South 22nd Street, Philadelphia, Pennsylvania 19103.

The minimum tour size is thirty persons, and the maximum tour size is forty persons.

The itinerary is as follows:

Friday May 25

Depart Philadelphia on Allegheny Airlines for Burlington, Vt. Arrive and transfer by private motorcoach to the Shelburne Inn. Luncheon at the lovely Shelburne Inn.

Afternoon private tour of Shelburne Outdoor Museum, which is a famous 35-acre museum depicting American life and village in the 18th and 19th Centuries. Features include restored houses, the sidewheeler TICONDEROGA, a stagecoach inn, many art and craft exhibitions, shops, etc.

Evening cocktails and dinner* at the Shelburne Inn as guests of Mr. Watson Webb, whose family for generations has been responsible for the founding and perpetration of Shelburne Museum.

Overnight at Shelburne Inn.

Saturday May 26

Breakfast at Shelburne Inn, followed by another special visit to the Shelburne Museum (pending confirmation). Late morning visit to the Webb Gallery of American Art. This gallery has a fine collection of Peale, Wyeth, Grandma Moses, etc. Return to the Shelburne Inn for lunch.

Afternoon drive southward to Woodstock, Vermont, and the well-known Woodstock Inn for an overnight stay.

Arrive in time for a cocktail party* hosted by Dr. and Mrs. Frank Elliot. Dinner at charming Woodstock Inn.

Sunday May 27

Breakfast at Woodstock Inn, followed by a special tour of the Rockefeller and Woodstock Historic Association houses here.

Early afternoon drive approximately 25 miles south to Reading, Vermont, where group will have a picnic lunch at the home of Mr. George Gallowher, and tour the house and grounds of this unique farmhouse. Return to Woodstock Inn for dinner and cocktails.

Monday May 28 Memorial Day

Breakfast at Woodstock Inn. Drive to Temple, N.H., for lunch at the Timberdoodle Shooting Club.* Mid-afternoon continue driving to Boston for a 6:00 P.M. flight to Philadelphia. Arrive 7 P.M.

* Indicates those cocktail parties and meals which are included in tour cost.

Memoir of Emily Bacon 1891–1972

By ANN GRAY TAYLOR, M.D.

EMILY Partridge Bacon was born in Moorestown, New Jersey, on February 10, 1891. She was graduated from Wilson College in 1912. She was class president for the last three years, and she continued as president and leader until 1966. She was very active in the social and athletic as well as the academic life of the college. Dr. Bacon was an alumnae trustee (1933–37) and was on the College Board from 1938 to 1951. The degree of honorary doctor of science was conferred upon her in 1938, and she was elected to Phi Beta Kappa in 1951 when it was organized at Wilson.

Dr. Bacon was graduated from Johns Hopkins School of Medicine in 1916 and came to Philadelphia General Hospital for internship. A residency at Mary Drexel Children's Hospital followed the next year. On North College Avenue, Mary Drexel and Lankenau Hospital were affiliated, so that when Lankenau moved to City Line they merged, and Emily was appointed as the first chief of pediatrics of Lankenau Hospital. She retired from this post in 1955 but continued to have her office there until June, 1965. On that day, more than two hundred persons attended the luncheon honoring her retirement as senior pediatric consultant.

A portrait of her, commissioned by a group of her friends, was presented by Mrs. George A. Starkweather, president of the Friends of Children, a hospital auxiliary, to Mr. Walter H. West, Jr., president of the Lankenau Board of Trustees, who accepted it as a gift to the hospital.

This memoir was prepared and published at the request of the Council of The College of Physicians of Philadelphia.

At that time, Dr. Edward Bortz said that Dr. Bacon had ministered to two generations of children, that she not only cared for their physical ills, but that she was a wonderful counselor to both children and parents. He also said that among the monuments to her zeal was Lankenau's Guidance Clinic, an out-patient counseling service for the problem child, which was established when the hospital moved to the Main Line. "Dr. Bacon had been urging such a service for years," Dr. Bortz said.

In 1919, Dr. Bacon became an instructor in pediatrics at the Woman's Medical College of Pennsylvania and was made an associate in 1923. When she was appointed professor of pediatrics in 1925, some of the older members of the faculty were surprised at the offer because of her youth. In 1949, Dr. Bacon received a citation from the Woman's Medical College, remarking that "her witty tongue and unexpected turn of phrase, together with sound knowledge of her subject have won much respect and affection from students and colleagues over the years." In 1952, she became professor emeritus.

Dr. Bacon was on the staffs of the Woman's Medical College Hospital, Woman's Hospital in West Philadelphia, and Philadelphia General Hospital. She was a member of the American Medical Association, the Philadelphia County Medical Society, the American Academy of Pediatrics, and the Philadelphia Pediatrics Society, of which she was the first woman president in 1937.

In October, 1971, the Philadelphia branch of the Academy of Pediatrics rewarded the six living professors emeriti of

the Academy, of which Emily was one. The reward was accepted by Dr. Frieda Baumann who took it to Dr. Bacon at Broomall Presbyterian Home.

An encounter with Emily was always a most interesting and enlightening experience. She was absolutely unselfish, always looking for a promotion for her friends. She belongs to the age of pioneering of all the specialties, of which pediatrics was one.

Memoir of Samuel William Eisenberg
1907–1972

By HARRY E. BACON, M.D.

DR. Samuel William Eisenberg, a proctologist for 35 years, with offices at 625 Radcliffe Street, Bristol, Pennsylvania, died on August 2, 1972, in Germantown Hospital, following a heart attack. He was 65 years of age and resided at 7319 Limekiln Pike, Philadelphia, Pennsylvania.

Dr. Eisenberg was a graduate of the University of Pennsylvania and Temple University Medical School, Class of 1935. He was associate professor of proctology at Temple and chief of proctology at Lower Bucks County Hospital. He was a diplomate of the American Board of Colon and Rectal Surgery, a fellow of the American Proctologic Society and a past president of the Pennsylvania Society of Colon and Rectal Surgery. Dr. Eisenberg was the author of numerous scientific articles and, too, was an avid photographer.

In 1963, Dr. Eisenberg was awarded the "Certificate of Appreciation" for 20 years of uncompensated services patriotically rendered to our nation. The certificate was signed by Presidents Franklin D. Roosevelt, Harry Truman, Dwight D. Eisenhower, John F. Kennedy and Lyndon B. Johnson.

Surviving are his wife, the former Bluma Levin; a son, Murray; a brother, Herman; a sister, Rita Katcher, and two grandsons.

This memoir was prepared and published at the request of the Council of The College of Physicians of Philadelphia.

Memoir of John Rodman Paul
1893–1971

By THOMAS M. DURANT, M.D. M.A.C.P., SC.D.

LAST year the United States and the entire world lost by death one of the outstanding contributors to human welfare. Though living the major part of his life in New Haven, Connecticut, Dr. John Paul was born in Philadelphia and spent the early years of his professional life in our city. Elected to fellowship in The College of Physicians of Philadelphia in 1926, he continued as a non-resident Fellow after joining the Yale University medical faculty in 1928.

Dr. Paul was born on April 18, 1893. His father, a Philadelphia attorney, must have had a profound influence on his son's early life, for he had a great avocational interest in natural science. The Paul home became a small museum of various kinds of rocks, stuffed birds, leaves, and so on. The scientific interest thus engendered in young Paul was undoubtedly whetted during his precollege years at St. George's school in Rhode Island, where he roomed with Philip Drinker, later to be noted for his engineering advances, enabling man to work beneath the ocean surfaces, and also for his development of a tank-type respirator. Philip's older brother Cecil probably had some influence on John Paul's decision to study medicine.

In 1915, after receiving an A.B. degree from Princeton, Paul entered The Johns Hopkins School of Medicine. He spent the next summer, that between his freshman and sophomore years, with the Grenfell Mission in Labrador, showing early his strong motivation for promoting the welfare of man through science. In 1917, when the United States entered World War I, he interrupted his medical training to enlist in the Army and go to France with the first American base hospital staff to be established there. A fellow enlistee with whom he had contact at that time was Hugh Morgan, later to become professor of medicine at Vanderbilt University. It was during this period that his interest and talent in investigative fields became apparent, in his work on blood substitutes, wound shock and infection.

Following his graduation from medical school in 1919, he became associated with Dr. W. G. Mac Callum and spent a year in Peru studying Oroya Fever. After this he took a two-year internship at Pennsylvania Hospital in Philadelphia, then remained at that institution for six years, where he became primarily responsible for the pathology and chemistry laboratories, but had clinical duties as well. Here he worked with Dr. Harold Austin and wrote the first of a long series of papers on rheumatic fever, which included an oft-quoted monograph on the pleural and pulmonary lesions associated with this disease.

In 1928, Dr. Francis Blake invited him to come to Yale as assistant professor of medicine. His association with Yale continued for the remainder of his life. In 1930–31, he carried out an extensive study of poliomyelitis, then epidemic in Middleton and in New Haven, with Dr. James D. Trask of the Yale Department of Pediatrics. In 1932, he and Dr. Trask organized the Yale Poliomyelitis Unit, the first research group to be awarded a grant from what was then called the President's Birthday Ball Commission, later the National Foundation for Poliomyelitis. In the same year there developed an

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unexpected dividend from Dr. Paul's rheumatic studies—the discovery of heterophile antibodies in patients with infectious mononucleosis. This led to the development of the well-known, valuable Paul-Bunnell test for that disease.

Dr. Paul's career was interrupted in 1935 when he became a victim of tuberculosis and became a patient at the then Desert Sanatorium of Southern Arizona. As a member of the staff of that hospital, I had the privilege of learning to know him quite well. The opportunities I had there to have long chats with him were extremely stimulating for me and I had the experience of observing how a brilliant mind can react to a long period of enforced bed rest. He became an ardent student of astronomy in the clear desert air and had his bed fitted with a telescope so that he could study the heavens of the gloriously clear Arizona nights by having his bed rolled out onto his patio. During the day he studied in texts what he had seen and later designed a lampshade depicting the starry heavens. Another interest which occupied him during this time was the study of pre-Spanish traces in the American southwest. Mrs. Paul, the former Leita Harlan, daughter of a trustee of The Johns Hopkins University, aided him in this work by taking courses in archeology at the University of Arizona. Later, when he had recovered his health sufficiently, he and she went on digging expeditions together, and many of their findings are now on exhibition in museums in the Southwest. Another study carried on during his recovery was the comparable incidence of rheumatic heart disease in Indians of Arizona, Colorado and Montana, demonstrating a remarkably low incidence in the Arizona group compared to the others.

During World War II, Dr. Paul worked with the Armed Forces Epidemiology Board as chairman of the Commission on Neurotropic Virus Disease. The chief problems under study were sandfly fever, poliomyelitis and hepatitis, at home and abroad. While working in Egypt, he became gravely ill with hepatitis, fortunately making a complete recovery. In 1944, he worked with Dr. Paul Havens, inducing hepatitis in volunteers.

In 1943 Dr. Paul published a masterful book on *The Epidemiology of Rheumatic Fever,* which included an extensive discussion of racial, geographic, social and environmental factors in the etiology of the disease. This book presented such a persuasive argument in support of the role of the hemolytic streptococcus in the development of the disease that never again was serious doubt about it expressed.

The work of the Poliomyelitis Study Unit (with Dr. Trask from 1930 to his death in 1942 and with Dr. Dorothy Horstman in later years) led to the following accomplishments: (1) discovery of the fact that there is more than one polio virus; (2) recognition of frequent "minor illness" during a poliomyelitis outbreak as non-paralytic cases of the disease; (3) demonstration of viremia during early phases of the disease, and (4) the finding that the virus is readily recoverable from fecal discharges of patients and in city sewage during an epidemic. It was the work of the Unit that was largely responsible for changing the then prevalent concept that the disease was primarily a neural infection, spread by the respiratory route.

"Retired" in 1961, Dr. Paul continued active until almost the time of his death. In 1967, the John Rodman Paul Chair in Epidemiology was endowed in his honor at Yale University. He received the John Phillips Memorial Award of the American College of Physicians as well as the Kober Medal of the Association of American Physicians. In 1971 Dr. Paul published a book, *A History of Poliomyelitis,* which will probably remain a classic for many years to come. The breadth of view characteristic of this book is in contrast to previous accounts, which have dealt mainly with events directly associated with the develop-

ment of the poliovaccine. Dr. Paul's death occurred shortly after the publication of this volume, so, as Dr. John Enders has said, it is natural for his friends and colleagues to think of it as his monument.

The world owes to this great man an immeasurable debt of gratitude for his innumerable contributions to the welfare of mankind. Sir Williams Osler's remarks concerning earlier discoveries in medicine can surely be applied to Dr. Paul: "The arrows of destruction fly not so thickly and the pestilence now rarely walketh in darkness."

Acknowledgement

In addition to my personal acquaintance with Dr. Paul, I am indebted to a number of sources for the preparation of this memorial, including especially Dr. Paul B. Beeson's Presentation of the Kober Medal to Dr. Paul (Trans. Am. Assoc. of Phys. **76:** 23, 1963).

Memoir of Richard Harrison Shryock 1893–1972

By WHITFIELD J. BELL, Jr.

RICHARD Harrison Shryock, Honorary Fellow of the College, died at Fort Lauderdale, Florida, on January 30, 1972, in his 79th year. In the early summer of 1970 he developed temporal arteritis; this with attendant ills weakened him; but he continued his research and writing, lately appeared to be measurably improving, but died suddenly of a heart attack while on vacation.

One of the foremost historians of medicine of his generation, Dr. Shryock made a major contribution to the modernization of medical history. By his teaching and writing during a third of a century he moved medical historical writing away from its engrossing concern with biography, bibliography and famous events toward presenting the subject in its broadest social, economic and philosophical contexts. This concept was fully illustrated first in *The Development of Modern Medicine* (1936). Neither the medical nor the historical profession at first appreciated the significance of Shryock's work—the *American Journal of Public Health* turned down an article on the origin and significance of the public health movement in the United States as being outside its interests; while the *American Historical Review* passed over *The Development of Modern Medicine,* reviewing it at last five years after publication, after it had been published in a German translation and when one scholar told the editor it was high time to notice so significant a work.

Whether they dealt with pediatrics, germ theory, education of physicians, nursing, the concept of the specific, or medical licensing, Shryock's books and articles explored basic questions of interpretation and interrelations of social and scientific factors. He made his fellow historians aware of the pervasive, often decisive, role of medicine and public health in human history, and also taught physicians, when writing history, to pay attention to the influence of society, government and popular thought on medical science and practice.

Dr. Shryock had a deep concern that medical history should be established on an institutional foundation in Philadelphia. He was often invited to lecture to medical classes; he held an appointment as lecturer on medical history at Woman's Medical College of Pennsylvania; and in 1942 he was actually named professor of medical history at Pennsylvania, although without stipend or course in the Medical School curriculum. For four years, 1950–53, he and Dr. Owsei Temkin, at the invitation of the Section of Medical History of the College, gave a short series of weekly lectures on general medical history to first-year students of the five Philadelphia medical schools. In 1954, instead of lecturing, he and Temkin held conferences with prospective teachers of medicine in the various institutions. They concluded that the program of medical history would be improved if each school gave its own course. But pressures on the curriculum from the scientific courses and the indifference of administrative officers and vocationally oriented students proved too strong. More recently Dr. Shryock participated in setting up a graduate program in the history of science and medicine administered jointly by the American Philosophical Society, Bryn Mawr Col-

This memoir was prepared and published at the request of the Council of The College of Physicians of Philadelphia.

lege and the University of Pennsylvania. Even this, however, is not what he hoped Philadelphia would do for medical history.

Although these aspirations for medical history in Philadelphia were the expression of a sound judgment of actual conditions, Dr. Shryock voiced them the more strongly because they related to Philadelphia. The same is true of his writings. All his work revealed a remarkably well-informed, critical, and supple mind, but it gave him a special personal satisfaction to be able to cite the indisputable achievements of Philadelphians, the Middle States, or the Pennsylvania Germans. He was, after all, a native of this city; an ancestor had been one of the first to print the Federal Constitution in German for the Pennsylvania Dutch; and he was closely attached to many Philadelphia institutions, which he served generously. In Baltimore, when he was director of the Institute of the History of Medicine, graduate students at The Hopkins, recognizing his obvious loyalty, called him "Mr. Philadelphia."

Richard Shryock was born in Philadelphia on March 29, 1893, the son of George Augustus and Mary Harrison (Chipman) Shryock, and grandson of a man who came to Philadelphia when his house and business in Chambersburg, Pennsylvania, were destroyed by the Confederate army in 1864. He attended the Manual Training High School, then transferred to Central High School, from which he was graduated in 1911. According to the class yearbook, his principal studies were modern languages and physiology, and his classmates gave him the punning name of Sky Rocket. He would have liked to study medicine; but, unable to do so for financial reasons, he went instead to the Philadelphia School of Pedagogy. For a time he taught fifth grade—an experience which gave him a lifelong interest in educational methods and materials and a stock of amusing and instructive tales about such arcane matters as how to drill a class in mental arithmetic. In 1917 he was graduated from the University of Pennsylvania. During World War I he served for some months at the Army Medical School in Washington, where he received his first instruction in medical matters. In 1919 he entered the University of Pennsylvania Graduate School, where, discouraged from offering a thesis on the history of public health—"an interesting subject, Mr Shryock, but it is not history"—he received his doctorate for a study of Georgia and the Federal Union in 1850.

He was not, however, to be diverted from his interest in medical history. One of the sources for his study of Georgia politics was the letters of Dr. Richard D. Arnold, mayor of Savannah and a founder of the American Medical Association. In 1929 Shryock published an edition of Arnold's letters. By 1930 he was well launched into medical history, having written biographies of several physicians for the *Dictionary of American Biography* and some articles on the social history of medicine. He was now planning a history of American public health, but as his research continued, he revised his plans and wrote a history of medicine since 1600 in its social relations. *The Development of Modern Medicine,* published in 1936, was revised and enlarged in 1947, and it has been published in England, Spain, Germany, France and Japan.

Professor Shryock taught at the University of Pennsylvania and at Ohio State University and in 1925 joined the faculty of the newly-enlarged Duke University. He returned to the University of Pennsylvania as professor of American history in 1938, was director of the Institute of the History of Medicine at The Johns Hopkins University from 1949 to 1958, when he returned once more to Philadelphia as professor of history in the University and librarian of the American Philosophical Society. He retired from his professorship in 1963 and from the librarianship at the end of 1965.

Though never a professed "revisionist," Shryock had a talent for making suggestions

and offering conclusions that revised many a long-standing judgment. In *Cotton Mather: First Significant Figure in American Medicine* (1953), he pointed out that this favorite whipping boy of liberal critics and historians was not simply an advocate of inoculation (which young Benjamin Franklin then opposed), but also had intimations of a germ theory of disease. When many scholars accepted the notion of "the flowering of New England," Shryock pointed to Philadelphia's achievements in music, painting, science and technology, and concluded that "Boston once excelled in cultural achievement by the simple device of defining culture in terms of those things in which Boston excelled." He could "think the unthinkable" in history—asking whether the establishment of a strong federal union in 1787 was in fact an unmixed blessing; suggesting that, as the North lost more men than the South in the Civil War, perhaps it is loss of status and property rather than lives that men resent most and remember longest; and reminding his fellow historians they "should guard against the assumption that all major outcomes in the American past must have been for the best."

In addition to the books already mentioned, Dr. Shryock's principal works in medical history were *American Medical Research: Past and Present* (1947), *The National Tuberculosis Association, 1904–1954: a Study of the Voluntary Health Movement in the United States* (1957), *History of Nursing: an Interpretation of the Social and Medical Factors Involved* (1959), *Medicine and Society in America, 1660–1860* (1960), and *Medical Licensing in America, 1660–1965* (1967). Some of his essays which best express his thought and reflect his methods were collected and reprinted in *Medicine in America* (1966). Professor Merle Curti of the University of Wisconsin called them "models of clear exposition of technical material," noted "the skillful use of 'human interest,'" and praised the wit and urbanity of their style.

Professor Shryock served on many committees and commissions, was president of several professional associations, received distinguished academic honors, and had a wide acquaintance among scholars in this country and abroad. In addition to the fellowship of this College, to which he was elected in 1958, he received an honorary degree of doctor of laws from Duke University in 1962. He was editor of the report of the New York Academy of Medicine's Committee on Medicine in the Changing Order and wrote a report on the faculty of the University of Pennsylvania, which he called "a study in American higher education." He was one of the first members of the History of Medicine Study Section of the National Institutes of Health, 1959–61, and was a vice-president of the International Academy of the History of Medicine and president of the American Association for the History of Medicine, whose Welch Medal he received for distinguished contributions to the field. His Garrison Lecture to the Association in 1970 discussed the medical reputation of Benjamin Rush. This lecture, greatly expanded from its original version, Dr. Shryock completed shortly before his death, and it was published in the *Bulletin of the History of Medicine* (vol. XLV, No. 6, 1971). It is, one student of Rush's life has written, the final word on the subject, and an appropriate conclusion to more than 40 years of scholarship and other service, much of it to the benefit of Philadelphia.

Memoir of William Joseph Somerville 1915–70

By DONALD A. DUPLER, M.D.

ALL who knew Slim Somerville were greatly saddened by his death on March 4, 1970, due to a subarachnoid hemorrhage from the rupture of an aneurysm of the Circle of Willis.

William Joseph Somerville was born in Sharon, Pennsylvania, in 1915. He was a graduate of Ohio Wesleyan University and Jefferson Medical College. He interned at the Graduate Hospital of the University of Pennsylvania, after which he spent four years in the Army during World War II, mostly in the Philippines. He was awarded the Bronze Star during this service. He was a Major in the Medical Corps.

Following the army years he returned to the Graduate Hospital. His subspecialty interest was rheumatology, and for some years he was Chief of the Arthritic Clinic at the Graduate Hospital, with a teaching appointment of Associate in Medicine at the Graduate School of the University of Pennsylvania.

In 1952 he joined the Staff of the Presbyterian Hospital. In addition to private practice, Dr. Somerville had a number of positions at the Presbyterian in which he performed most effectively. He became physician in charge of the Student Health Service and the Employees Clinic and Director of Medical Education. He was a Diplomate of the American Board of Internal Medicine and an Associate of the American College of Physicians. He was a member of the Philadelphia County Medical Society, a Fellow of The College of Physicians of Philadelphia, a member of the Philadelphia Rheumatism Society and the American Rheumatism Society.

Slim operated in a quiet, unobtrusive manner; he was always friendly, never caustic, ready with a quick joke, and comfortable to be with.

Dr. Somerville was particularly loved by the nursing staff and student nurses. Gentle, understanding, he was easily approachable and always available for help in their physical problems and as a friendly advisor. Many a Presbyterian nurse has stated she would not have finished her training if it had not been for Dr. Somerville. His portrait is now hung in the Student Nurses Residence.

Dr. Somerville made a significent contribution to those whose lives he touched. He will be greatly missed.

Surviving Dr. Somerville is his wife, the former Dorothy Schanely.

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Memoir of Harry Sands Weaver, Jr.
1903–72

By CHARLES S. CAMERON, M.D.

IN the years of transition of medicine from an art to a science, Harry Weaver stood on the side of the art of which he was a master. Yet he managed to bridge that transit as a member of the faculty of the Hahnemann Medical College for 41 years, during 23 of which he served as professor and chief of the Division of Opthalmology. He followed in the steps of his father, who had been a member of the Hahnemann faculty for 46 years.

Harry Weaver was born in Philadelphia in 1903. He was graduated from the Episcopal Academy, received his Bachelor of Arts degree from Syracuse University and Doctorate in Medicine from the Hahnemann Medical College in 1929. He attended the Graduate School of Medicine of the University of Pennsylvania and was appointed to the Hahnemann faculty in opthalmology in 1931.

He entered the military service in 1941 and served as an officer in the Naval Medical Corps until 1946 when he became a reserve officer with the rank of captain. He retired from the active reserve in 1963.

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Dr. Weaver was appointed professor and chief of the Opthalmology Department of Hahnemann in 1946, a position which he held until his voluntary retirement in 1969. He had served as a member of the staff of the Wills Hospital, was chief opthalmologist at St. Luke's and Children's Medical Center and consultant to the Philadelphia Veteran's Administration Hospital, the Philadelphia General Hospital and the Chester-Crozer Medical Center.

He was a fellow of the American College of Surgeons, of the American Academy of Opthalmology and Otolaryngology, of the Pennsylvania Academy of Opthalmology, of the Order of Military Surgeons and of The College of Physicians of Philadelphia.

Dr. Weaver is survived by his wife of 42 years, Elizabeth, and two sons, a family to which he was extraordinarily devoted.

Harry Weaver was an exemplar in his committment to teaching (over the years he averaged ten hours per week, and as a volunteer!), to his patients, and to his medical school and his alumni association, which he served so faithfully and so long. A wise physician, a skillful surgeon, and a staunchly faithful friend, he will long be remembered by all who were priviledged to know him.

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I. Q.: Social Goals and the Genetic Heresy[1]

By RICHARD J. HERRNSTEIN, Ph.D.[2]

THE origins of mental testing—in particular, the I.Q. test—are easily traced to events of the late nineteenth century, of both a theoretical nature within science and in the practical realities in European and American society. These theoretical and the practical origins themselves emanate from a single, more fundamental fact of life at those times. At the risk of oversimplification, we can blame western society's affluence and liberalism. The Industrial Revolution depended upon individualism, personal liberty, and free economic enterprise. Those requirements ultimately broke down a social order based on fixed lines of political and moral authority. At the same time, they brought their own forms of social irrationality, but that is beside my point here. For here, I note simply that biology was ready for an idea that men—like all creatures—must struggle for survival and success. Consequently, biology began to view mankind not as a special creation, but instead as continuous with the rest of animal life. The upshot—obvious, I am sure, to all—was the Darwinian theory of evolution.

While the biological theory of the continuity of species challenged the ancient idea of man's special place in the scheme of things, it promoted the idea of special individuals among us. Darwin noted that the individuals within any species vary in important ways as regards survival and their success as procreators, that those variations appear to be passed on from generation to generation as an inherited legacy, and that they therefore affect the shape of things to come in the species's future. Furthermore, the theory clearly applied to man no less than to other creatures, which is why Darwin became the center of a storm of controversy, whose fallout continues even now to drench us from time to time.

Among its other effects, the theory of evolution left a deep mark on the infant subject of psychology. It told the psychologists of the time that they should look at people to see how they vary in psychological make-up, and that they should expect at least some of those variations to run in families. While some of a family's traits could be blamed on (or credited to) the circumstances in which it lived, others were likely to be of biological origin, these Darwinian psychologists reasoned. Soon there-

[1] A shorter version of this paper was presented as the Nathan Lewis Hatfield Lecture LV, The College of Physicians of Philadelphia, 1 November 1972. This lecture is the second in a series entitled "Medicine and Society."

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after, psychologists were beginning to experiment with instruments of measurement for testing whether a given person had the special qualities that favored him for success in society. Or, inversely, the instruments might have been designed to tell whether an individual was so deficient in these psychological qualities that his (and his offsprings') future looked bleak (1, 2, 3). It was not long before Darwinian theory had filtered through psychology, emerging as what we now call mental tests.

The practical impetus to testing at that time was simply the enormous expansion of public education. The western countries had the money to educate an increasing fraction of their population; they had found that society in general profits from the education of its masses, and they largely subscribed to a political philosophy that made a virtue out of democratic, public schooling, at least in comparison with earlier times. On the whole, public education in the western countries was a splendid success, but, as a by-product with special relevance to my subject, it began to be unmistakably and unavoidably clear that children did not profit equally from access to public education. To be sure, access was often (and still is) far from universally equal (and it was also too often true that schools offered something less than education). But for whatever reasons, at the end of the nineteenth century there was growing concern because the mere creation of schools fell a long step short of producing the educated populace called for by liberal democratic philosophy. The intelligence test was one response to this problem, for it held forth the possibility of diagnosing children's capacities for learning, perhaps even of defining better what a school might reasonably strive to teach.

At the end of the century, then, the various influences converged and soon tests were being given to large numbers of people, especially children. Through a process of trial and error, the tests themselves evolved. Before too long, they were producing results that were statistically reliable and, from a practical standpoint, valid. The scores earned by children on intelligence tests predicted, by and large, the kinds of things one would want such tests to predict—mainly, the children's performance in the intellectual aspects of school work. A great deal could be said—and has been—about whether tests "really" measure intelligence or something else, but that thorny matter I shall sidestep for now. It will recur later. Whatever the tests tested in actuality, they served quite well the purpose for which they were designed, which was to pick out the children who were going to have trouble in schools and those who were going to flourish, and they did so with remarkable precision and efficiency. At the same time, the tests uncovered a pattern both disturbing and ironic, which is, in fact, my main interest.

One of the earliest findings of mental testing—virtually from the first studies on—was that children from different social classes tended to have different average scores. The liberal impulse that promoted testing seemed to be inadvertently producing evidence for natural class differences. An early experiment, since confirmed countless times in numerous countries, showed that the children in a private school scored, on the average, substantially higher than the children in a public school. One interpretation could have been that the private school did a better job of developing the children's mental faculties, and perhaps it did. However, there was also a difference in the social origins of the pupils in the two schools which also contributed. Whereas the public school children came from all levels of society, the children in the private school were recruited disproportionately from the "leading" families—the ones in which the breadwinner was a successful professional or businessman or academic. In the entire field of psychology, no social fact has been so widely confirmed as

the advantage on intelligence tests of the children of the "successful," as that term is used by the members of the society themselves. It has turned up in every country that has taken the time and effort to examine it, without much regard to whether the country is run democratically or autocratically, whether the economic system is capitalist, socialist, or some blend thereof, just so long as the country is advanced enough so that one can identify a continuum of occupations from high to low (4, 5).

The average difference in I.Q. of children from the various social classes gets misinterpreted in distinctive ways, often depending upon the politics of the interpreter. It should not be taken—for example, as social snobs might have it—that every child born into a professional family outscores every child born into a workingman's family. While the averages differ between those two strata, the individuals overlap substantially. In fact, every level of society produces the full range of I.Q.'s. Matings of intellectual and social powerhouses not infrequently spawn offspring who cannot hold their own even in ordinary schoolwork, while couples trapped in the direst depths of poverty and ignorance sometimes spawn offspring of surpassing intellect and mental power. Indeed, such commonplace deviations from their respective families give the lie to the other common misinterpretation of the class difference in I.Q., which is that it reflects nothing but social class differences in life style, in particular on the value placed on matters of intellect. The sheer variability in the scores earned by offspring of each social class—even among brothers and sisters in a family—shows that something more complex than simple class customs are being measured. Later, that greater complexity will come in for further scrutiny. Now, it is offered merely to refute one of the common misapprehensions about the data.

The size of the class difference in scores depends upon details that would be out of place here, touching on such technicalities as the specific test used, the criterion of social class, the setting for the study, the size of the samples involved, and, finally, whether the adult members of the class or their children are being compared. For the adults, the difference in I.Q. may be as much as 50 points between the top socioeconomic layer—the major business managers and the prominent professionals—and the bottom—the chronically unemployed or the unskilled day laborers (6). For their children, the difference is in the range of 20 to 30 I.Q. points. As a general rule, the children from different classes resemble each other considerably more than their parents do, or to put it another way, the within-class similarity is greater for the parents than the children. The point is worth getting straight, for it further blasts the idea that the I.Q. difference between classes just reflects social surroundings. It also may partly explain why children seem to find traffic across class lines easier than their parents.

In the United States, the class difference in I.Q. gets confounded with racial and ethnic strains within our population. Anywhere that large ethnic groups in a society are disproportionately scattered on the rungs of the social ladder there are comparable problems. Although I have made no study of it, I have heard that on the Malay peninsula, the Chinese people have long tended to excel in business, as compared to the ethnic majority, the Malaysians. It may safely be guessed that the social class difference in I.Q. therefore favors the Chinese over the Malaysians. Recently, newpapers have been full of ethnic upheavals in Uganda, where the majority Negro government is exiling the Asiatics Indians, who have similarly tended to predominate economically there. In Malaysia, in Uganda, even in the British Isles with its mixture of Irish and English, the social class difference in I.Q. gets mixed up with the politically explosive issue of ethnic discrimination. I call this to your attention not because it is

my topic, but because it is not. Ethnic complications are not a necessary feature of the social class gap in test scores. Even in societies that are racially or ethnically fairly homogeneous, such as London early in the century or Scandinavia right now, the differences in I.Q. among the social strata are not substantially smaller than they are here in heterogeneous America. For present purposes, then, the question of ethnic and racial differences is immaterial, although I recognize it as a profound question in its own right.

I focus on social class differences in tested intelligence because of what I see to be their probable consequence. The argument can be simply put. If the I.Q. measures native mental capacity, then social classes are distinguished by genetic differences, even where there are no obvious racial or ethnic disproportions to explain or worry about. Later, I will discuss briefly whether there is anything genetic about I.Q. scores, so I will not try to substantiate it here. For now, note that the people who invented intelligence tests in the first place, and those who have been perfecting them, have all along sought just such an index of native capacity. They wanted to measure *aptitudes,* rather than *achievements,* and the distinction has persisted to the present. I.Q. tests are the prime example of aptitude tests. But even if we assume for now that the tests measure something inherent in people, and, from that, conclude that the social-class gap has a genetic ingredient, no one should suppose that it is entirely genetic. There are many other determinants of social success in modern society—a person's family wealth, encouragement, cultural background, special abilities other than intellect (some of them not too admirable, perhaps), not to mention the countless ways the lucky break, both good and bad, can intervene. Moreover, people vary in ambition, desire, stamina, and even in good looks—all of which may play some role. The genetic ingredient in mental capacity therefore accounts at most for part of the story. Yet it is a crucial part, for it, along with a few other inborn traits, may be largely irreducible. While society has taken steps to cut down on the social advantages or disadvantages of the family one lands—by public education, welfare, and massive taxation—it is not doing much about the genetic legacy. And the less contribution there is from other factors to social status, the more important, relatively speaking, become the genetic ones.

Consider a concrete case. In America today, or, at least as recently as within the last decade (7), blacks operate under special handicaps in the competition for social status. A black whose I.Q., schooling and family background place him in the same category as a given white is likely to end up substantially lower both in social status and dollar income. It is a good bet that the discrepancy reflects racial prejudice. Consequently, if prejudice could be eliminated, the black would rise higher on the social ladder, but by doing so he would rise to a position more in accord with his genetic intellectual endowment. In general, prejudice interferes with the power of such traits as I.Q. to predict social position and, in that sense, reduces the accompanying genetic contribution to society (still under the assumption that I.Q. has a significant inborn aspect).

Favoritism—the opposite of prejudice—at the other end of the social continuum has an analogous effect. Consider a dull, white child born into a prominent, tolerant and affluent family. They will be able to shelter and nurture their backward child and may eventually use pull to find him a sinecure, where his incapacity can do little harm and where his social status will be a fair match to his more gifted siblings. Such things may not happen as often as protest literature would have us believe, but insofar as it does happen, preventing it would tend to place

greater weight on genetic factors in social status. If family pull were outlawed, this hypothetical child would slide somewhere farther down on the ladder, more in accord with his limited inborn capacities.

In addition to such conspicuous examples as those two, many people get ahead or held back for reasons that our society deems unjust in principle, such as their religious or national origin, or because of nepotism or graft, etc. When and if society eliminates such injustices, it will be shifting control to reasons we do not deem unjust—at least not yet. We would then be emphasizing such differences between people as their I.Q.'s, or their drives, or their physical stamina, or perhaps, their looks.

Much of the social legislation in America for a couple of generations has striven to give everyone a more equal chance. Subsidies to health care, to education, to various impoverished regions of the country, as well as progressive income taxes and inheritance taxes, are all calculated (in principle though often not in fact) to provide citizens with a more equitable distribution of opportunity, insofar as it is within the power of social legislation to arrange such matters in a society that also values freedom and individual initiative. But if the legislation succeeds in getting rid of the grosser handicaps that burden some people, there will remain the handicaps and advantages inherent to the people themselves—such as the one indexed by intelligence tests.

I put the gist of this argument in the *Atlantic Monthly* (1971) last year and some people got very upset about it. For more than half the academic year the classroom in which I teach was regularly invaded by people with hostile literature to disburse. Indeed, for a time, I was simply unable to speak in public settings at all—from Iowa City to Princeton—because would-be disrupters would take over the lecture hall, or threaten to do so if I dared come. At Princeton University the disrupters promised to "force" me to answer their questions, so I cancelled my visit and stayed in Cambridge, where the disrupters were content merely to circulate literature or shout at me.

There would be little point in calling those unpleasant episodes to your attention if they did not convey a message of some broader significance. My article, with its argument about genetic factors in social stratification, had struck a vein of Lysenkoism in the United States. Perhaps some of you may not have heard of T. D. Lysenko, the Russian agricultural expert who led an unholy crusade against the theory and practice of classical genetics in the Soviet Union (8). From the early 1930s until the mid-1960s, it was dangerous for a scientist to study genetics honestly there, for it meant risking loss of status, support, freedom, and, in some cases, life. Lysenko and his minions had the support of figures high in the Soviet government, including apparently even Stalin himself.

Lysenkoism was no mere fluke of intolerance in Russia. To doctrinaire Marxists, the classical theory of genetics seemed a heresy to be rooted out of the socialist consciousness. Put simply, Marxists did not like the thought that there could be significant biological traits out of the reach of improvement by the new state created in their revolution. Man himself was the main candidate for "improvement," but, by extrapolation, everything from lions to winter wheat was supposed to yield to the environmental pressures exerted by the socialist society. In the Moscow zoo lions were lying down with lambs, and people were, it was confidently asserted, soon to give up their "bourgeois" preoccupations. The idea that people might have innate limitations or even inborn preoccupations of one sort or another, offended some of the Soviet leaders of that era. In Lysenko, they found a self-styled "scientist" who assured them that their socialist intuitions about the unsoundness of genetics were correct. In return for

his assurances, Lysenko gained almost total control over the lives of biological scientists in Russia, especially when their work touched even remotely on genetic questions. Unhappily, he used his power brutally and stupidly.

Marxists do not always, perhaps not even usually, react violently to classical genetics. These days, as far as I know, the science flourishes in Russia and in the other socialist states of the world. However, the protracted Lysenkoite episode reveals the potentiality for extreme uneasiness. That may explain why my most vehement critics were self-proclaimed Marxists—members of the Students for a Democratic Society and of the Progressive Labor Party, a radical splinter group on the far left. Not that I paid any price remotely resembling the Russian experience. The SDS and the PLP hardly have government or institutional support for their activities. I drew my salary; I had the sympathy of many colleagues, some of it even expressed publicly; I enjoyed my usual good conditions for scholarly work. Most people, in fact, disapproved of the Lysenkoism of my militant critics. Yet, the public discussion of the issues in my article had been seriously deflected by this outrageous handful. I discovered that experts who could have lent competent support to my argument usually preferred to remain silent, or, if not exactly silent, to let me know in private how much they agreed with the case I had put. They did not want their classes or lectures disrupted. On the other hand, there was no shortage of apparent experts who publicly raised objections (in my judgment, inconsequentially). For them, in contrast to my supporters, there was a fair amount to be gained by speaking up and little to lose. The radicals, of course, would not bother them, for they were supporting the radical cause. But American liberals, too, find the idea of genetic social stratification distasteful and want to hear that it is false. While most are not Marxists in any concrete sense, they share a conviction in the power of the environment to remake man. My argument, suggesting as it does that we do not know how to rearrange the environment enough to wipe out inborn difference, runs against the liberal grain. To attack my argument had the automatic, warm sympathy of much of the liberal, academic community, which, consequently did not demand high standards of evidence from my critics. The public has therefore heard a distinctly lop-sided dialogue on a timely matter, short of advocates on one side and of data on the other.

One benefit of the one-sided public discussion is that I have had ample opportunity to study the complaints against my case. The objections seem to fall into four distinct groups, which may be framed as questions. I will spend the remaining minutes of my talk characterizing the four questions and sketching briefly my answers to them. They cannot really be answered briefly—for each touches on a large scholarly literature—but I can make a start and point to the relevant sources for further study.

1. *Is mental capacity inherited?* The argument for genetic distinctions between the social classes obviously rests on an affirmative answer. Population biologists approach such questions as a statistical matter, rather than as a question of biochemistry or any other direct examination of genetic transmission. When we ask whether mental capacity is inherited, our question is best translated into an examination of the correlations in intelligence test scores of people who are related by blood to varying degrees. Depending on the degree of consanguinity between any pair of people, they will, on the average, share a certain proportion of their genes. Under certain common assumptions, siblings, for example, share 50%, as do parents and their children. Grandparents and their grandchildren share 25%, as do uncles or aunts and nieces or nephews related by blood. From such purely statisti-

cal considerations, plus a number of subtleties relating to genetic interactions of various types, a branch of biometrics has evolved that may be specifically applied to this first question (9).

In the case of intelligence test scores, the correlations between members of an extended family may arise from environmental similarities, perhaps as much as, if not more than, from the shared genes. Thus, in this particular application of quantitative genetics, it becomes particularly important to examine cases where, for one reason or another, the genetic ties between individuals have been separated from the environmental ones to a degree. If we experimented on people the way biologists do on other creatures, we would place children randomly in varying environments, independent of their parents. We would look especially at children raised in the same surroundings but who come from natural parents who had markedly different test scores. We would examine whether half-siblings were less alike in scores than full siblings, even though they grew up together, but whether they were still more alike than unrelated children growing up together. Then we would compare them to siblings and half-siblings growing up apart. It should be clear even from these few cursory examples that, given sufficient data, one could assess the relative contributions of genetic and non-genetic factors to scores on intelligence tests.

Of course, we do not do such experiments on people, but some of the crucial data get collected nevertheless, simply as a result of the inevitable dislocations in families and because some of it can be extracted from tests on ordinary families. The clearest, if not the most unproblematical, kinship correlations use identical twins separated in early childhood or infancy (10). The psychological literature contains 122 reasonably well documented cases of such twin pairs who were given more or less standard intelligence tests and from whom the results are readily available. Many of the pairs were separated within days of birth and almost none stayed in the same household for more than three years. Where available, the data show that the homes into which the children were placed were uncorrelated in socioeconomic status. That does not mean that every pair of twins was separated into different social classes, but that they went into homes as similar or different as one would get if they were being placed by the roll of dice. In most cases the children had no contact with each other as they grew up.

If the I.Q. were totally environmental, the correlation between twins raised in different homes, different social classes, and without contact would be the same as the correlation between people picked at random from the population—zero. (This disregards the tiny chance that how you look determines your I.Q., presumably by affecting profoundly how people treat you, which would produce a correlation between twins.) If, on the other hand, I.Q. were as fully inherited as eye color, then the accident of where and with whom the twins grew up would not change the correlation from what it would be if they grew up together. Identical twins, sharing the same set of genes, would correlate in eye color by 1.0, the maximum value that the correlation coefficient can assume. A correlation of 1.0 means that the twins covary exactly in eye color (which may seem like an odd way to say that they have the same eye color, but it is the suitable terminology for correlation coefficients). For I.Q., the correlation between the twins turned out to be about .85, which is substantially higher than the correlation between fraternal twins growing up together in the same home, although not as high as the correlation between identical twins growing up together, which hovers around .90 or more. Fraternal twins correlate slightly more than the ordinary siblings in a family, no doubt because the

twins, growing up together in the family's history, experience things at the same age that pairs of ordinary siblings are bound to experience at different ages. Nevertheless, these effects are minor compared to the similarity of identical twins growing up in separate homes, perhaps even knowing no one in common. The correlation between their I.Q.'s, in fact, is only slightly less than the correlation between their heights or between their weights.

From the correlation between the twins, quantitative geneticists can calculate an index of "heritability" by making certain assumptions. In brief, if they assume that the environments are truly uncorrelated, and that the children were exposed to the full range of environments in the society as a whole, then the correlation coefficient directly estimates the heritability index. Heritability is technically defined as the proportion of variance observed in a trait that is attributable to variance in the genotype. Thus, a heritability of .85 means that 85% of the variance observed in I.Q. arises in genetic variance. Or, to put it another way, a heritability of 85% means that getting rid of all non-genetic sources of variance in I.Q. (which includes such things as sheer measurement errors, as well as the effects of the environment as usually conceived) would reduce its total variance only 15%. As noted above, the twin data estimate heritability only if the children experience the full range of environments and if they are being raised in uncorrelated environments. If they are raised in correlated environments, then some of the similarity between them may arise in the environment, not the genes. If they experience something less than the full range of environments, then they are more similar than they would otherwise be because of a hothouse effect. In fact, while we cannot be sure that the twin data meet these two conditions fully, we have no clear indication of the extent to which they do not. The .85 estimate of heritability is higher than most estimates, based on other kinds of data, but not by much, as such things go. Most of the estimates of heritability of I.Q. have fallen in the range between .65 and .9, with a preponderance between .75 and .8 (5). Because the heritability is a statistical entity, it is heir to the usual sources of uncertainty and variation, but, give or take 10%, we have a good idea of where it falls for I.Q.

No single study can, or should, convince anyone of so significant a matter as the inheritance of I.Q. That is why a short discussion is bound to be somewhat frustrating to believers, doubters, and agnostics alike. A careful reading of the literature (1–16) will show that with only a few exceptions, estimates hover in the same vicinity, even though they use data from various degrees of kinship and children raised by their own parents or in foster homes. Perhaps the most impressive confirmation comes from foster children, who tend to correlate more highly in I.Q. with their natural parents, whom they may never see, than with their foster parents who raise them (17). The exceptions to the general finding come mainly in studies of unrelated children growing up together as adopted siblings. Such children have, in a few studies (see reference 7 for a review of this literature), correlated more highly in I.Q. than they should have for a trait with a heritability of .80. They do not correlate as highly as natural siblings, but highly enough to warrant further attention. One possible explanation for these deviant results is selective placement into foster homes. It would be possible, after all, to place children into foster homes so that their hair color would be similar (given knowledge of their natural parents), but this would not make hair color an environmental trait. A similar artifact may be distorting the data on I.Q. Another possible explanation is simply sampling error, since

the variability in these data is large and the number of cases relatively small. However, further study might confirm that foster siblings do correlate substantially (in the range .2–.3) in I.Q. for genuine environmental reasons, which would force a downward revision of our estimate of heritability. For now, however, the overwhelming preponderance of evidence (18) suggests a major role for the genes in determining I.Q. Not an exclusive role, I hasten to add, for moving a child from a disastrously poor environment to an excellent one, or vice versa, is likely to have a measurable effect on his or her score. By statistical necessity, however, only a small fraction of our population experiences either of those extremes. For most of us, most of the actual uncertainty about our I.Q.'s is resolved at the moment of conception, even though it may take another ten to fifteen years before it can be accurately measured by present tests.

2. *Does the I.Q. really measure intelligence?* Many people, having heard the evidence for the inheritance of I.Q., will at last shrug their shoulders, acknowledging resignation if not defeat, but then parry with the claim that the I.Q. does not really measure intelligence. In fact, intelligence tests come in all sizes and shapes. Some rely heavily on verbal materials and on general information. Others are so devoid of words or cultural facts that they are readily given to people from vastly different societies, such as eskimos or South Sea islanders. Some consist of batteries of subtests—as many as 50 or more; others consist of a single set of unsorted questions. Some impose rigid time limitations, placing a premium on the ability to work swiftly as well as accurately. Others impose no time limitation at all. Some call for multiple choice answers, some for answers made up by the subject, and some for direct manipulation of objects as the answer. Some seem to have considerable face validity as measures of intelligence—as when a person is called upon to think abstractly—while others seem quite remote—as when he is asked simply to repeat back a list of numbers he has just heard. Obviously, with so mixed a bag, neither the blunt accusation that the tests do not measure intelligence nor a simple denial makes much sense.

One of the persistent findings with intelligence tests is that they intercorrelate. If a heterogeneous collection of people takes a large battery of subtests, the individuals turn up in roughly the same rank in performance on many, if not most, of the subtests. Thus, someone who does well on one test, has a better than average chance of doing well on the others, and inversely if he does poorly. Clearly, similar tests naturally show larger correlations than tests that are manifestly remote. But even with tests as different as assessments of mechanical ability and simple vocabulary, some correlation is found. The upshot of these correlations has been a statistical technology —called "multiple factor analysis" (14)—designed to ferret out the number of underlying attributes (or "factors") that we must credit to people in order to explain the extent to which they intercorrelate on various tests and the extent to which they do not. Without plunging into the mathematical depths, I can summarize the findings by saying that the diversity of mental capacities seems to resolve itself into a dozen or so main ingredients. People appear to have a capacity for intellectual work in general, an excess of which is helpful in almost all spheres of thought, and a shortage, a handicap. The general capacity is especially useful for grasping verbal and quantitative nuances and relationships. In addition, there are several more specialized, though still quite broad, capacities. There is a talent for the use of words, which expresses itself in the quality of one's vocabulary and reading comprehension; there is numerical ability which has obvious applications; there is a spatial factor, which enables

people to manipulate images spatially in their mind's eye, there are various other sorts of perceptual and mechanical capacities. All in all, knowing about ten or twelve separate scores for a person—standing for his levels on the various factors—tells you a great deal about the general power of his mental abilities and their relative strengths in comparison to each other and to other people's.

But the critic may still not be satisfied, for he may feel that all this measurement is beside the point. While the answer to question *1* tells us that intelligence test scores measure a heritable trait and the results of factor analysis reveal an intricate structure of mental capacities, one may still declare oneself unpersuaded. And, in fact, to do so is within one's rights, for the definition of such words as "intelligence" is not given by any higher authority to whom we can appeal. Given that the word is used in everyday English, with all of the attendant inconsistency and ambiguity, it is a foregone conclusion that no one definition can satisfy all the customers. For me, and for most people who know the facts, the tests seem to come up with scores that predict what a proper intelligence test should predict as regards school and life's work thereafter, at least in the large majority of cases, and they appear to be substantially heritable to boot.

3. *Does mental capacity contribute to success in society?* As usual, the question brings forth a statistical answer. The correlations between I.Q. and success in the socioeconomic sense range between .4 and .7—which is to say, from medium to medium-high (19, 7). Except for success in school, nothing practical correlates as highly with I.Q. as socioeconomic status, and only schooling is more correlated with socioeconomic status than I.Q. From that, however, do not leap to the conclusion that schooling, rather than I.Q., predicts occupational success, for bear in mind that schooling itself depends on the I.Q. Or, to put it another way, if you wanted the best predictor of a seven-year-old child's eventual occupational standing, the I.Q. would be much your best bet (19). No measure of family surroundings nor of father's education or occupation predicts as well, although each predicts a little. Childhood I.Q. also predicts eventual schooling, even better than it predicts eventual occupational success. Thus, it seems, I.Q. gets converted by our schools into the main determiner of socioeconomic status at this time (barring external influences like business cycles or differences in the standard of living in the different regions of the country). Or, if not converted in our schools, then at least channeled through them, for we do not know much more about the chain of events from mental capacity to schooling to occupational success than that they are substantially correlated.

We do, however, know a bit more. The people who hold jobs at the lowest socioeconomic levels span virtually the full range of I.Q. There are, for example, unskilled laborers with I.Q.'s well above 120, as well as a good many below 80. However, for jobs higher in the scale of social standing, the range of I.Q.'s narrows (20). For the top occupations—the professionals and the major business executives—the range of I.Q.'s is fairly well constrained to the upper third of the distribution if not higher. A similar pattern describes the relation between schooling and I.Q. While those who do poorly in school may have I.Q.'s almost anyplace in the range, those who do well almost always have high scores. A simple, slightly oversimplified, way to summarize the way I.Q. contributes to success—whether scholastic or occupational—is to say that it is necessary but not sufficient for ascending the successive steps up the ladder. Each levels takes at least a certain I.Q. plus other things. What those other things might be are not hard to guess—energy, interest, health, luck, good connections, etc.—but

they do not alter the fundamental importance of mental capacity.

4. *Must society have social classes?* Although people may find polite ways of talking about such matters, it appears that, right now and for some time past, the typical citizen of any advanced country has been able to tell what defines occupational success and failure. The standards for success have not changed much in the past couple of generations or from country to country in various parts of the world, notwithstanding differences in culture and political system (for summaries, see references 4 and 7). Wherever such surveys have been taken, the ratings of occupations fall fairly closely into line with more objective measures of socioeconomic standing. It does not seem to matter whether the rating is made by a young person or an elderly one, a successful person or an unsuccessful one, a bright person or a dull one. People even agree in their tendency to overestimate the status of the jobs they themselves hold. While the assent does not prove that society *must* stratify itself according to notions of success and failure, it suggests that there may be powerful psychological forces at work, ones that might prove exceedingly hard to withstand.

When people say that physicians or industrial managers have succeeded where laborers and plasterers have not, they are expressing, in shorthand, society's allocation of rewards. Money, status, respect, admiration, and perhaps even envy, flow towards the top of the scale of occupations. And virtually every member of society knows which way is up and down, for the scale is society's consensus—for good or ill—on the value of various forms of endeavor. If having an excess of brains confers any advantage at all in the competition for society's rewards, then the bright people will tend to end up in the most lucrative and admired positions—to their own advantage, of course, but also to society's to the extent that it has gotten competent people to do the consequential tasks. All the other attributes besides intelligence that contribute to occupational success will likewise sort themselves out if competition is guided by society's allocation of its rewards.

When the process of competition is working right, the formation of social classes therefore guides competent people into the jobs in which their abilities will serve society's purposes best. But then, because some of the abilities are inherited, there will be genetic gaps between classes. The process is hampered by prejudice or nepotism or unequal opportunity, but correcting those grievances will not bring equality in status. On the contrary, it could easily make status differences even more genetic than they are now. The hereditary meritocracy threatens as long as we continue rewarding competence, on the one hand, and letting individuals have an equal chance to get ahead, on the other, and nothing else changes. While worthy by themselves, those two liberal principles together seem likely to continue stratifying society by hereditary differences between people, perhaps more so as we become more liberal.

At this point, perhaps, a fifth question comes to mind. Is there any sensible alternative? A recent book (7) seems to suggest one—simply equalize incomes. By definition, that direct move would abolish economic classes, but I do not believe society can afford to lose the benefits of its most gifted people in the inconsequential jobs. Also, if incomes were equalized, I suspect other perquisites would creep into use, as they have in socialist states that boast of economic uniformity. A better hope, I believe, is educational innovation. Our schools subject all students to a more or less common set of opportunities, which some exploit far better than others. Genetic advantages and disadvantages snowball into the broad spread of cognitive skills coming out of our schools. If, in contrast, our

schools could compensate for inborn intellectual weaknesses and build on inborn intellectual strengths, then the spread of skills might be reduced. The gap between the more and the less able individuals might be diminished by the right kind of compensatory education. At present, no one knows how to accomplish such pedagogic feats on a large scale, but it may be worth recognizing that society would have less need for the idea of status if its citizens did not vary so in intelligence.

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Who Catches the Throwaway Child?[1]

By LISA AVERSA RICHETTE[2]

Most Americans vaguely understand that children are abandoned, rejected and quite literally thrown away, either cast in brown paper bags into streetcorner litter baskets or jettisoned like excess and useless cargo at a Howard Johnson Restaurant on the Pennsylvania Turnpike. A winsome baby's face peers out from the traditional photograph taken at the hospital to which the throwaway is immediately taken; a whimsical nickname like "Turnpike Sam" becomes the identity tag of this nameless young human being, and hundreds of frustrated would-be parents besiege the hospital and welfare authorities offering the baby a beautiful and roseate future. So one emits a contented intellectual burp and turns the newspaper page to the next human interest item. The ending is a good one: a child has been saved from desolation through a series of fortuitous happenings; the alert attendant, the kind waitress, the dedicated welfare worker divinely intuits which of the thronging would-be parents will most closely represent the ideal family setting for the abandoned, adorable tyke. The scenario is reminiscent of a sentimental silent film of the 1920s, evoking bathos and furtive tears. It is also a totally simplistic and air-blown rendition of an underlying American reality, far uglier, far more complex and, until now, shamefully hidden from public view and understanding and, hence, subjected to little rational study, research and social control.

The child who is thrown away by his parents is usually well-fed and clothed. It is almost as if the parent is seeking by cosmetic artifice to make the child irresistibly attractive to the ultimate finders, thereby insuring that the child will have new and loving caretakers.

Whatever abuse such a child may have suffered is effaced by the final act of renunciation, by the firm closing of the washroom door, the anonymous car speeding away from the infant sucking his bottle.

Another far larger group of throwaway children seldom enters the ranks of journalistic show biz. Their scarred and battered bodies are not the stuff on which photograph editors dote, and too often the short death-directed odyssey of their lives are not currency from which appealing nicknames are coined. Invisible, captive hostages of parents incapable of renunciation, they represent a victimized, yet medically discrete, population encapsulated under the phrase, "The Battered Child Syndrome."

I have seen many of these children in the course of my work as an assistant district attorney, youth lawyer, and as a judge in a metropolitan setting. In my book, *The Throwaway Children,* I described the bleak horror of their lives and the impotence of present legal structures to reverse the syndrome, to break the throwaway cycle. Reader response to some of the graphically depicted abuse and cruelty ranged from outraged disbelief to anguish. Yet the battered child was only one prism of the crystallized institutional violence against children the book sought to portray. In a sense, these children should have provoked the most spontaneous, unambivalent and far-reaching impulse to reform; unlike the less appealing behavioral deviant, they posed no threat to the community, but were instead, in Lindy Burton's phrase, vulnerable

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children constantly threatened by the human and social environment in which they found themselves.

Perhaps it is too much to expect that a community unmoved by napalmed Vietnamese children, by bombarded orphanages and hospitals, will respond strongly to a child whose parents are methodically beating it to death within the four walls of their home.

Perhaps we are so egocentrically wrapped up in the notion that our own children are our own private property that to intervene against another man or woman's acts with respect to his or her child is too anxiety-provoking, too ego-shattering. Whatever the motivation for our paralysis, it has been our single response to the literature, the reports, the evidence of our own professional experience.

Since the medical profession, and particularly the roentgenologists, were the first to uncover systematically the phenomenon of physical violence against children, it is particularly appropriate that I come this evening as a professional in the justice system to discuss with you, the skilled scientists of health systems, how together we may bind up the wounds of these children, thus saving their lives and, to use the title of the new work by two of America's foremost experts in child abuse, Dr. C. Henry Kempe and Dr. Ray. E. Helfer, *Helping the Battered Child and His Family* (Lippincott, 1972).

The single most valuable reference work I may recommend, apart from the excellent Kempe-Helfer volume, is David O. Gil's *Violence Against Children, Physical Child Abuse in the United States* (Harvard University Press, 1970). Gil's work combines a superb current review of the literature with his own orginal four-part research which includes the following:

1. A nation-wide survey of public knowledge, attitudes and opinions re: physical child abuse conducted during the month of October, 1965.

2. A nation-wide survey of child abuse incidents during the years 1965–67.

3. A pilot survey of child abuse cases in California reported between September 1965 and 1968.

4. A comprehensive analysis of every incident reported through legal channels during 1967 in a sample of cities and counties throughout the United States.

I am particularly impressed by Gil's scope, because he presents a "macroscopic and epidemiologic" approach in contrast to the "many clinically oriented studies of physical child abuse which were in progress or had already been completed when this series was initiated in 1965."

Using Gil's conceptual definition of physical abuse and analyzing his conclusions in terms of the Philadalphia experience, I hope to energize myself and you into useful, intelligent and responsible action, so as to transform the valence of our experience from negative to positive.

One of the looming intellectual problems for lawyers is always that of definition; for you it is another dimension of d-ness—"diagnosis." In bringing child abuse cases to the bar of justice, these d's often merge into a dilemma of doubt sufficient to warrant yet another "d" term: discharge of the accused parent.

We lawyers proceed under an inadequate conceptual framework: the statute specifically prohibiting cruelty to children carries a maximum penalty of three months' imprisonment, or 90 days. (The statute enjoining cruelty to animals carries a more severe penalty: three years or $1,000 fine or both).

Where police investigation and hospital reports reveal serious and often permanent injuries, the prosecutor's office will recommend that the Grand Jury indict for Aggravated Assault and Battery, Assault with Intent to Maim and Murder, or Aggravated Cruelty to Minors.

These offenses all imply volitional, deliberate behavior witnessed, if at all, only by a reluctant, ambivalent spouse or relative too

terrified to testify. The victim is too young to bear credible oral witness. Only his or her body will give eloquent testimony, and a resourceful defense counsel will bar even that avenue of truth because he will contend that the viewing of the body will be too inflammatory of passion and, hence, violative of the defendant's right to a fair trial.

I will sketch this situation rapidly at this moment; presently I will flesh it out in terms of an actual debacle of a case over which I most reluctantly presided. But my purpose is to contrast this rigid legal framework with Gil's conceptual definition:

> "Physical abuse of children is the intentional, nonaccidental use of physical force, or intentional, nonaccidental acts of omission, on the part of a parent or other caretaker interacting with a child in his care, aimed at hurting, injuring or destroying that child."

Using this conceptual definition, two pediatric residents at Children's Hospital, Dr. Marie Russell and Dr. Willa Drummond, studied case records from November 1970 to May 1972 for admissions of physically abused children. Forty-four such children were uncovered. In a paper presented to the hospital and broader community in June 1972, several distressing but familiar patterns emerged:

1. The largest clustering of these children, 27 of the 44, were under 18 months of age. (Rule out direct victim testimony immediately for more than 50% of these cases.)

2. Of these 44 children, 48%, or 21 children, went directly home from the hospital's emergency room. Their conditions are described by Drs. Drummond and Russell as: 7, satisfactory; 14, unsatisfactory; 13, foster care; 2, hospitalized in another institution; 1, in a penal institution; 1, dead as a result of batterings; 6, lost to follow-up.

3. Of the 44 children, five suffered the lasting effect of severe mental retardation as a result of the battering.

"At least 20 siblings of the 44 children are known to have been battered before or after the incident involving the admitted child .... Seventeen of the 44 children accounted for 23 previous admissions to Children's Hospital. Abusive parents are known to hospital shop to avoid detection for previous abuse. Thus, the real number of previous incidents is undoubtedly much higher, but records from other hospitals were not obtained" (according to a memorandum on Children's Hospital child abuse statistics prepared by Susan Orkin for Compcare, Inc.).

Many of us who heard Dr. Drummond and Dr. Russell give their report were visibly moved. Some of us wept. It seemed unconscionable that all the talent, compassion, energy and good will contained in that conference room and in this lecture hall could not halt the suffering of innocent children.

In the wake of such emotionally overcharged responses to hospital statistics, it is important to keep in general perspective Gil's cool-headed observation that, based on the 6,000 to 7,000 incidents reported annually, "the physical consequences of child abuse do not seem to be very serious in the aggregate.... Even if allowance is made for underreporting, especially of fatalities, physical abuse cannot be considered a major cause of mortality and morbidity of children in the United States."

The non-epidemic nature of a given childhood disease has never constituted a valid reason for ignoring it or refusing to apply the best research techniques to its elimination. My own first-hand experience with troubled children in general gives me a less reassuring image than Gil derives from his statistics. Yet I agree wholly with Gil's conclusion that violence against children is linked with poverty, racism and the quality of ghetto family life. Unless changes of a long-range nature are forthcoming in these underlying patterns, the pattern of violence against children will not be significantly changed. Yet, within the existing

structures, positive forces can be generated.

Setting aside for a moment the actual problems of litigating and hearing these cases both from the viewpoint of the rights of adults and children, one may first ask oneself the very basic question, "How to prevent the explosive tirade on the part of the caretaker which does such damage to the child?"

In a society where non-intervention, even in crisis moments, of physical assault becomes increasingly the rule for what Goffman terms "relations in public," it is difficult to rely on neighborly watchfulness and sensitivity. Community monitoring by block leaders, indigenous "helpers," etc. is an insufficient device. The watchfulness and the sensitive response have to be institutionalized in service that does not smack of "social work" or "psychiatry," but represents a human option for the beleaguered battering parent.

The Kempe-Steele child abuse project at the University of Denver Hospital stresses repeatedly the value of such a community open-line. In Philadelphia, the Denver model is not feasible for the moment since we do not have the larger control apparatus of which it is a part.

Through a friend, who is in fact a physician's wife, I recently came upon an excellent article in the March 1972 issue of *M.D.'s Wife,* the official publication of the Women's Auxiliary of the American Medical Association. The piece, entitled *Prevention, The Best Medicine;* describes the excellent organization established by a Santa Barbara, California, doctor's wife, herself a nurse. Like many other Americans, Mrs. Harold Miles was convinced that the police and court agencies offered proper protective services to children. When she read a social worker's bitter letter following the *preventable* death by beating of a local child, she began a three-year investigation into child abuse which culminated in the formation of a vitally needed preventive program called CALM—Child Abuse Listening and Mediation.

CALM's purpose is an outreach program to "find potential child abusers and to get them to accept assistance before their children become scapegoats for adult frustration and anger."

Mrs. Miles ran a simple message in a local newspaper, listing a telephone number to call if one knew of a mistreated child and wanted to tell someone without fear. Immediately she received a strong response justifying the service and indicating the need for follow-up counseling and visits. Precisely needed was such a "nonpunitive resource center to reach those parents who would not have sought other agency help." Aided by a grant supported by the Santa Barbara County Board of Supervisors, CALM hired a paid director to take calls on a 24-hour basis and enlarged its volunteer corps of assistants. Today it continues to provide an open line for help to parents unable to cope with child-rearing relationships.

Philadelphia desperately needs such a service. Last May a two-year-old boy was beaten and starved to death in West Philadelphia. Neighbors, hearing the child's cries, repeatedly called the police, the Department of Welfare and the Department of Public Assistance, since the latter agency was giving funds to the drug addict mother and her tenants in the house. All their efforts to intervene to save the boy's life failed; finally, the only contribution they were able to make was to pool their funds to provide the child with a decent funeral.

I appeal to the medical wives in this and other audiences to join with other Philadelphia women in the establishment of a CALM project for Philadelphia. These women constitute a well-organized, sensitive and resourceful natural grouping. For years I have urged the women of Philadelphia to become involved in volunteer work that is more than fund-raising or bandage rolling,

that carries human involvement and growth as its service style.

Efforts by volunteers in related social problem areas have borne good fruit. In the area of drug abuse problems, adolescent tensions and runaways, volunteers have filled the service gap brilliantly and creatively.

I have made this one of my resolutions for 1973: to work for the establishment of a round-the-clock counseling and referral service for child abuse problems. I hope that many of you will join me in this resolution to help the abused children of this city.

I am proud to give an illustration of volunteer tenacity and achievement in this area of child abuse by a group of young lawyers, headed by Marjorie G. Marinoff, an able member of an establishment law firm. Appalled at the fact that no lawyer represents the abused child's best interests during court procedures, this committee came forward to provide sixty volunteer lawyers for these cases.

Drawing the ire of the Philadelphia Department of Welfare, this project has nevertheless received the imprimatur and support of my colleague, Administrative Judge Frank J.Montemuro, Jr.

Working in tandem with Compcare, Inc. (now Group Health Planning, Inc., a private health resource finding project), the Young Lawyers' Committee has determined that the City Welfare Department is unable to shoulder the burden of research, investigation and effective advocacy for the abused child.

Presently, only two DPW social workers are assigned one quarter time each to child abuse cases. But even apart from personnel shortages, the social service approach with its concept of total family representation, of balancing the parents' needs and the child's needs, often results in a cavalier disregard of the imminent danger facing the child. All too painfully one recalls the case of Roxanne Filumiero, the three-year-old child found dead in New York's East River after a New York Family Court judge returned her to her mother over the protests of pediatricians and hospital personnel who had seen her prior injuries.

Partisan advocacy is as important as so-called "objective casework" when human lives are threatened. Furthermore, my own experience as an assistant district attorney convinces me that often the Department of Public Welfare acts in its own, and not the child's, best interests. Where a DPW foster parent is the abusing parent, no action is taken, except to save face for all concerned. I remember my bewilderment and that of a young policewoman who reported to me the problems of four young children in an outrageous foster home. The blanket in which the youngest child was carried out of that home was alive with vermin and maggots. Even to my experienced eyes, these children appeared in a shocking condition of neglect and abuse.

Despite my pressures, nothing happened! The children were placed in another foster home (with no therapeutic intervention), the caseworker was allowed to continue her myopic and incompetent services, and the foster parents were never prosecuted. It would have been too embarrassing, too difficult, I was told. Ranks were closed quickly as they always are when too many persons are involved in scandalous abuse of public trust.

Perhaps we may pause for a moment of silence in memory of the murdered mentally retarded children placed by social workers in the Pennsylvania concentration camps run by an enriched sadist and his wife, with the approval of state and local welfare departments.

I strongly oppose the concept that a city bureaucracy can represent the human needs of a child. Only a lawyer with no allegiance save to that child can perform such a task.

Of what are the social workers truly

afraid? Is it really that we lawyers will make the ultimate judgment as to what is best? Hardly, for the judge will always have that exclusive function. The fear is real enough, but has different roots.

The present legal-medical ad hoc processing of child abuse cases through the District Attorney's office is totally unsatisfactory. Where the child initially has had excellent pediatric services by a sensitive hospital staff such as that at Children's, St. Christopher's or the Medical College of Pennsylvania, the prosecution has the benefit of decent medical testimony and an expert opinion on whether or not the injuries resulted from physical child abuse as defined by Gil. Without such medical testimony, the judge is left with a considerable quantum of reasonable doubt, which under our constitutional scheme must be resolved in favor of the defendant.

Recently I heard a case of child abuse against the father of an 18-month-old boy whose body was severely burned over two-thirds of its surface. Prior to coming to trial before me, the matter had been heard in Juvenile Court (without a lawyer from the Young Lawyers' Project, since the case antedated the founding of the pilot project), where the boy had been placed in the custody of his grandmother.

At trial, the grandmother stated that the little boy was back in the home with his alcoholic parents, at her own initiative. The child looked ill to me, so I had him taken to Philadelphia General Hospital, where he was found to have double pneumonia, despite the fact that it was late summer. The pediatrician told me that the child was undernourished and neglected.

During the trial, the Commonwealth established, mainly by argument since there were no witnesses, that the child had been severely scalded by being placed in a tub full of boiling water. The father's contention was that he had left the child in tepid water to answer the telephone, that the child had reached up, turned on the rosette-shaped tap, and sat quietly as the hot water poured on to his body.

While his lawyer prepared a legal brief in support of his discharge (a position I opposed), the entire family simply vanished from the face of the city. Only the assigned detective, the assistant district attorney and myself have any interest in locating them. I doubt we ever shall—while this child is alive, that is.

With the establishment of an effective counseling service such as CALM and the public support of a project for the legal representation of these children, it becomes feasible to think of diverting these child abuse cases out of the criminal justice system into a program like A.R.D. (Accelerated Rehabilitative Disposition), which delays prosecution and trial while the individual seeks and receives basic help for underlying problems. In this way the decision to prosecute is a last, and not an only, alternative.

None of these mechanisms will be effective alone. We need a three-pronged approach: community intervention on a preventive level, effective representation of the child's best interests, and well-orchestrated therapeutic alternatives to short-term imprisonment, the traditional penalty for this offense.

If I have appealed to the women in this audience, it is because I believe that they have more leisure and inclination to do the very needed groundwork. On a deeper level, I believe that the quality of empathy and caring which women traditionally represent in this culture are the very needed energizing forces that must permeate a male-created world of violence, war games, and brutal control systems.

It is clear that we have violence against children in America because America is a violent society. What we must change is the quality of human relations on every level, and especially we must abandon forever the

idea that our children are our chattel, to do with as we will. The mindlessness, the violence, the indifference to suffering must be counterbalanced by a new spirit in which hopefully our two professions will join hands to form a living human net in which to catch all the throwaway children of our world.

Who will catch throwaway children? We will, because we care, because we have vision, heart and determination. Because in a world where darkness is mounting, we who are sworn to uphold human values must renew our dedication, refuel our lamps and go forward as leaders toward the light of a new dawn for humanity.

Somewhere the funds must be found for the projects I have described and ultimately for the type of Center for the Study of Abused and Neglected Children advocated by Dr. Ray E. Helfer and others. For destruction, terror and bombs there is no dearth of money; for the saving of children's lives, is the cupboard truly bare?

The History of Strychnine in the Nineteenth-Century Materia Medica

By JOHN S. HALLER, Jr.*

It is a truth, demonstrated beyond a doubt, and accepted by all leading scientific men, that all the forces of the universe are corellative and convertible. When I say all the forces, I conclude so called vital force wherever found, and no careful thinker will be so rash as to deny its truth. Many persons, when subjected to influences that induce disease, are able, by the vigor of their organism, to resist the impression and thus pass unscathed, while others around them, through lack of the necessary vital resistance, readily succumb. When the environment of a person has been such as to induce functional derangement and consequent disease, the first duty of a physician is to increase the vital forces of the patient by gentle stimulation of the depressed functions. Among the therapeutic agents which possess this power none are to my mind more valuable than Strychnia and its salts.

(L. A. Merriam, *Dosimetric Medical Review,* 1888)

There are a class of patients . . . who come to the doctor with this little tale of woe: "They has lost all feeling for a woman, or vice versa, they has lost feelin' for a man." You feel like you ought to give them a severe object lesson in morals, but as you are not teaching morals exclusively, just advise moderation and temperance; give your patient a box of strychnine tablets and the next time you see him his face is all smiles and you know youth has been again renewed.

(J. M. Barrier, *New Orleans Medical and Surgical Journal,* 1901)

IN a paper read before the Louisiana State Medical Society in 1901, physician J. M. Barrier praised the alkaloid strychnine ($C_{21}H_{22}O_2N_2$), discovered by Pelletier and Caventou in both nux vomica and the bean of St. Ignatius in 1818, as the most valuable remedy in the armamentarium of the pharmacopoeia. No other drug, he observed, was more useful or prescribed more often for mankind's many diseases. Although Barrier's remarks were undoubtedly exaggerated, strychnine was used in a wide variety of diseases and health problems in the nineteenth century—from impotency, neuralgia and anemia, to amaurosis, lead poisoning, hiccoughs, chorea, gout, seasickness, and a host of other illnesses. Doctors gave strychnine as a convalescent tonic in acute fevers, as a substitute for digitalis in heart affections, as a preventive for shock in surgical operations, and for correcting neurasthenia and chronic indigestion. There were even growing numbers of medical men who recommended the alkaloid in place of mercury as a milder and more effective cathartic, since it acted as an "excito-motor stimulant" on the sympathetic motor centers controlling peristaltic motion. Looking back through the nineteenth century, the history of the use of strychnine reflects an ever widening application in the materia medica, and in at least one instance, a special role in pharmaco-therapeutic reform (1).

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Therapeutic Application

"The range of disease to which strychnine is applicable is constantly becoming more extended," wrote an Ohio practitioner in 1853, "and from the happy results obtained already, we may confidently expect still further discoveries of its adaptation to other forms of disease." Having successfully administered strychnine in epilepsy, St. Vitus's dance, paralysis and impotence, he suggested its additional application in diseases of the bowels. During an epi-

demic of cholera near Yellow Springs, Ohio, in 1851, he began administering the alkaloid to improve the tonicity of the muscle tissue in the bowels. Opiates, astringents and stimulants seemed only to exert a mechanical influence over the bowels which soon passed off, with the exosmosis continuing unrestrained. After administering $\frac{1}{32}$ gr. dose of strychnine every two hours for a period of twenty-four hours and then $\frac{1}{16}$ gr. dose three times a day for a week, he was able to correct the bowels and restore the muscle tissue to its normal state. This procedure was similarly used for "Mexican diarrhoea," which appeared in the Mississippi Valley region during the 1850s. Doctors again resorted to the tonic character of strychnine by giving it in small doses at regular intervals. The efficacy of the drug, they argued, depended upon its stimulating effects on the nervous system "which then in turn affords that necessary stimulus required by the muscles in order that their functions may be thoroughly performed" (2).

Throughout the nineteenth century, doctors relied heavily upon the remedial effects of strychnine in anti-periodic diseases. According to one Ohio physician, scarcely a day went by that practitioners in the western counties were not besieged with patients demanding relief from "dumb ague," pains in the head, "anomalous neuralgia," violent vomiting and purging every other day, periodic pains in the orbit of the eyes, "sun-pain," or periodic hemorrhage from the uterus. The observant doctor, he wrote, should at once recognize that the primary cause of these difficulties lay in that "mysterious and occult agent *malaria* or *miasmata.*" Although sulphate of quinine was the most commonly prescribed drug for diseases of a periodic nature, many sufferers refused to take the medicine, complaining that it caused unpleasant sensations in the head or that they could not retain the medicine in their stomachs. In these cases, the Ohio physician turned to strychnine, recommending it also because it cost much less than quinine. Despite his high praise for the alkaloid, he nevertheless warned doctors to guard against the danger of poisoning (3). This caution stemmed from the common practice of administering the dose in frequent and repeated intervals until the patient could tolerate a grain or more, in the belief that the proper medicinal effect could occur only when the patient showed specific signs such as twitching of the toes or the stiffening of the spinal cord. This form of "brinksmanship" therapeutics, however, required the watchful eye of the physician who had to take care that the effects were not fatal. It also meant that the doctor had to be well armed with antidotes such as chloroform, lard, camphor, conia, tobacco and various emetics in the event the patient showed signs of poisoning (4).

During the 1860s, physicians began giving hypodermic injections of strychnine for paralysis cases, leading many doctors to change from the pill to the syringe. Experiments carried out by the Hypodermic Committee of the Medical and Chirurgical Society of London demonstrated that there was not only more rapid action with the syringe, but far less dosage was required because of the intensity of effect; furthermore, there was a greater certainty of action, and many unpleasant symptoms were avoided with the cellular injection. One of the first requirements of hypodermic administration, however, was for the practitioner to gauge the dose more carefully and to begin with a minimum rather than a maximum dose—usually $\frac{1}{60}$ or $\frac{1}{80}$ gr. Hypodermic application produced "a general warmth or glow of the cutaneous surface" soon after the injection, experienced particularly in the paralyzed limbs and along the spine, making the patient "quite hot all over." This sensation lasted several hours, according to the strength of the dose. Following this, the patient felt a sensation of lightness

and freedom, relieving the "heavy-weight" sensation from the paralyzed part. A paralyzed leg felt "light as a cork," and in many instances demonstrated temporary power (5).

In addition to hypodermic injections of strychnine and the normal granules administered by physicians, there were any number of patent and proprietary medicines which contained the alkaloid. Medicines which sold under the seductive titles of "nerve and blood tonics," "stimulant tonics," and "stomach tonics," contained strychnine along with quinine, iron, and wine. Two popular patent medicines were Elixir Cinchona, Iron and Strychnia, produced by Reed, Carnrick and Andrus of New York, and Elixir Calisaya, Iron and Strychnia, produced by Sharp and Dohme of Baltimore. These two nostrums were highly popular during the 1870s for paralysis, neuralgia, intermittent and remittent fevers, and as a general tonic for headache, dyspepsia, "menstrual epochs," rheumatism, gout, constipation, and neuroses (6). Physicians sometimes prescribed strychnine in combination with alcohol as a heart tonic, giving the alcohol an hour or so before the alkaloid. In that way, argued one practitioner, strychnine would hold the heart at the point to which the alcohol had raised it. "Alcohol boosts the heart," he wrote, while "strychnia furnishes the peg to hang it on" (7).

There were many Victorians who consumed enormous quantities of strychnine to counteract the effects of alcoholism. In 1875, a California practitioner (8) reported a man who regularly ate twenty or more grains of strychnine in an hour's time "after a long and continued debauch."

> The first time my attention was particularly called to it, he wished me to give him a bottle of strychnia, which I did at night about bed time. He took the bottle, pouring the strychnia into his hand, and threw it into his mouth as carelessly as though it were salt; and, in the course of half an hour, not feeling the effects from it that he wished, he repeated it, and continued to do so until he became perfectly sober. The quantity required would correspond to the length of time he had been drinking, and the quantity of whisky he had drunk. I was struck with the wonderful effect it had to so completely sober him, and leave his system so entirely free of any nervous disturbance and without the reddened and bloated appearance of the face, the dull, heavy eyes, and irritable stomach of the drunkard. After two weeks' drunk, with all the appearances of approaching delirium tremens, he got up in the morning with his mind clear, his eyes bright, his skin clear and fair, and with all the appearances of a man in perfect health and vigor, and ate as hearty a breakfast as usual, and went to his work as though he had never taken a drop of whisky in his life.

Subsequently, practitioners began experimenting with strychnine as an antidote for delirium tremens and maniacal dementia associated with alcoholism, and claimed beneficial results (9). For women who indulged in either alcohol or pernicious habit-forming opiates, doctors pushed the doses of strychnine to the verge of toxicity, indicated by "a slight twitching of the toes and finger tips" (10).

Strychnine was also a favorite remedy for diabetes in the 1860s and 1870s. While some referred to diabetes as a diseased state of the kidneys or liver, other doctors looked to the lungs, stomach or nervous system for the cause. For those who believed it to be due to imperfect oxidation of the hydrocarbons, strychnine was prescribed in small doses to stimulate the respiratory functions. "The etiology of diabetes is not well understood," wrote J. Milner Fothergill of London. "Under the circumstances we must be content to meet the empirical facts of clinical medicine, as far as possible, with rational therapeutics." If the dose was too large or too frequently repeated, however, he warned that it could cause physiological irritability and only increase the diabetic tendency (11).

Fothergill found strychnine a potent medicine in respiratory diseases and prescribed it as a direct stimulant to the respiratory organs for his patients in the London

Hospital for Diseases of the Chest. He gave a combination of strychnine and ammonia as an expectorant for chronic bronchitis and emphysema. Furthermore, in cases of acute disease where the lungs began to fail, and where there was a danger of death by apnea, he claimed that no respiratory stimulant was equal to the combination of strychnine and phosphoric acid (12). Other doctors in the London Hospital prescribed strychnine as a useful agent in checking the night-sweats of consumption. According to one doctor, when the respiratory efforts were imperfect, from exhaustion of the respiratory centers, carbonic acid accumulated in the blood, exciting the sweat glands to profuse secretion. By administering strychnine, however, he was able to increase the excitability of the respiratory center, causing more perfect respiratory action, thus ending the night-sweats (13).

Because strychnine possessed a special influence on the respiratory centers and pneumogastric nerves as well as upon the medulla oblongata, spinal cord and peripheral nervous system, physician Thomas J. Mays of the Rush Hospital for Consumption in Philadelphia recommended Fothergill's treatment in diseases of the lungs. Strychnine treatment afforded relief for difficult breathing and quieted the nervous restlessness so common with the illness. It also reduced the accelerated pulse rate. When such effects took place, according to Mays, the patient almost at once began to desire more nourishment and gained weight and strength. "This power on the part of strychnine to augment bodily weight is really a very important one," he wrote, "inasmuch as it demonstrates that drugs which are exclusively stimulant in their action are also constructive agents in an indirect sense, although, unlike food, they contribute no material whereby the bodily tissues are built up." He believed that strychnine acted very much like a spur or whip on a lazy horse. It enhanced "molecular or vital activity causing the tissue-cells to assimilate and to appropriate an increased amount of reserve nutritive material" (14).

Mays pointed out that anemia was almost always associated with consumption, and although he was not convinced of the exact causal relation between the deterioration of the elements of the blood and the consumptive condition, he nonetheless felt that anemia played an important role in the ultimate intensity of the disease. For that additional reason, he recommended strychnine because of its value as a blood-builder (15). "Over and above its stimulating action on the nervous system, or perhaps indirectly through the sympathetic and pneumogastric nerves," he wrote (16), "strychnine possesses the power of increasing the absorption of the products of digestion in the alimentary canal and of enhancing the blood-building process."

> In estimating the therapeutic value of strychnine we must, therefore, not overlook the property which it possesses of enhancing the process of white blood-cell formation. This means a great deal. It means that, in addition to its other functions, it is a genuine bloodbuilder. It means that it greatly aids the lymph-glands of the Peyer, with which the intestinal walls are studded, in common with the spleen and the other lympathic glands throughout the body, in transforming the organizing reserve nutritive material into white blood-cells. The importance of this influence will be fully realized when we consider that recent advances in physiology make it exceedingly probable that a large number of red blood-corpuscles are nothing but transmuted white-blood cells—the change consisting chiefly in the transformation of the protoplasm of the latter into hemoglobin and stroma. Unlike food, strychnine does not supply the material from which these cells are formed, but it furnishes the force which stimulates to increased activity the organs whose function it is to generate them. To sum up, then, the action of strychnine, it can be said that over and above its influence on the general spinal nervous system, it acts specifically on the medulla oblongata, on the respiratory centers, and on the pneumogastric nerves, and additionally possesses the power of invigorating the blood-making process.

Though Mays did not believe that the

patient should be exposed to the risk of strychnine poisoning, he did feel that too frequently the drug was given in doses which made its effects almost inert. Accordingly, the patient's constitution had to be "slowly impressed with the influence of the drug until there is developed a heightened reflex irritability and general restlessness, or until brilliant light or loud sounds produce a painful sensation in the eyes and ears, or until diarrhea occurs." Mays commenced with doses of 1/32 gr. four times a day for about two weeks and increased the dose 1/8 gr. each week until the patient began to manifest signs of physiological disturbance. In some cases this did not occur until the patient was taking 1/6 gr. or more four times a day (17).

Pharmaco-Therapeutic Reform

In the last quarter of the nineteenth century, Adolphe Burggraeve (1806–1902), a professor of medicine at the University of Ghent, set out to reform both pharmacy and therapeutics by suggesting a solution to the divisive feud which then raged between the homeopaths and allopaths. Homeopathy (*homoios,* like and *pathos,* state or feeling), a name given to the medical system introduced by German physician Samuel Christian Friedrich Hahnemann (1755–1843), revived the Paracelsian theory of signatures by stating that diseases were cured by drugs which produced a similar pathological effect upon the healthy body, or *similia similibus curantur,* that infinitesimal doses of drugs were more effective than heroic doses, and finally, that diseases were merely a manifestation of psora or the 'itch.' These ideas, developed in Hahnemann's *Organon der rationellen Heilkunde* (1810), placed him in opposition to the disciples of William Cullen, John Brown, Benjamin Rush and other Edinburgh physicians who dispensed 'heroic' doses of drugs under the doctrine *contraria contrariis curantur,* and who were termed allopathists (*allos,* other and *pathos,* state) by Hahnemann. Burggraeve felt that while both schools were, in their own peculiar manner, products of the uncertainty of the galenic pharmacopoeia, each was, nonetheless, bordering on medical heresy—homeopathy by moving to infinitesimal doses which lacked the power to cure a patient, and allopathy by using massive doses which literally drowned the patient in dangerous medicines. And between these two rivals, Burggraeve pointed to numerous medical men practicing "armed expectation," who preferred to stand by and allow disease to run its course, acting only against complications. It was these tendencies in medicine—which either overacted or acted not at all—which induced the Belgian physician to introduce the science of dosimetry, a pharmaco-therapeutic theory based on a two-fold premise: that medicines were to be administered in small doses measured mathematically, and that they were to be given in accordance with the law of gentle stimulation, prescribed with the idea of sustaining the vital powers, combating fever, and restoring the bodily functions to their normal condition. Foremost in the arsenal of medicines, Burggraeve (18) placed the alkaloid strychnine which he proudly called the "war-horse of dosimetry."

Besides being an effort to discover a more rational ground between the schools of homeopathy and allopathy, Burggraeve's dosimetric approach to therapeutics was also an attempt to seek more exactitude in the manufacture of pharmaceutical drugs. He claimed that French pharmacist Charles Chanteaud had made the first major breakthrough in pharmacodynamics by manufacturing alkaloids in doses of mathematical precision. In place of the illusory infinitesimal dose prescribed by the homeopaths, Chanteaud perfected a process for producing precise chemical quantities (centigram, milligram, or demi-milligram) of pure active drugs (19). Burggraeve believed that

homeopaths who administered their triturations and dilutions in only a quadrillionth or quintillionth of a gram justified the witticism: "What is homeopathy? It is to throw a milligramme of substance somewhere in the Seine at the point where it enters Paris, and to drink a few drops of the water, taken where it goes out." Furthermore, according to dosimetrist Albert Salivas, homeopathic tinctures were prepared from medicinal plants which were composite and not really simple in their nature. "No matter how carefully the work is done," he wrote, "the proportion of the elements is never exactly known to the manufacturer even if he is the most careful and conscientious in his work." Besides, the properties of the plants used by the homeopath lacked uniformity—they varied according to the country of origin, the time of harvesting, the method of preservation, the condition of freshness or drying at the time of processing, and the method of preparing the plant (20).

Despite Burggraeve's ostensible purpose of finding an alternative to the feud between the homeopaths and allopaths, he also expressed little faith in the pharmaceutical profession as a whole, for in all of his writings, and in all of the journals dedicated to the advance of dosimetry, he recommended and advertised only the products of Charles Chanteaud. What began as an effort to revolutionize pharmacy and therapeutics appeared at second glance to degenerate into a massive advertising campaign for the manufacturing company of the French pharmacist. To further this campaign, Burggraeve sought to eliminate the local pharmacist completely by suggesting that doctors prepare and sell their own drugs from dosimetric granules manufactured by Chanteaud and sold wholesale by Burgoyne, Burbridges, Cyriax and Farries of London. Otto Juettner, one of the proponents of dosimetry, believed that once the physician became his own druggist, he would eliminate a variety of abuses present in nineteenth-century pharmacy. Patients would save time as well as money by having the examining physician fill his own prescription. Then too, there would be less chance for error in the pharmacist's misreading the prescription. In addition, the physician would be able to ensure the quality of drugs by dealing with a single pharmaceutical company whose drugs were of standardized purity; finally, by keeping the patient away from the local apothecary shop, the physician protected him from the temptations of patent and proprietary drugs (21).

An essential purpose of dosimetric therapeutics was not only to sustain and fortify the constitution during illness, but to take precautionary measures to destroy those conditions which encouraged the development of illness. As a first line of defense in preventive medicine, dosimetrists prescribed the Seidlitz Salt which consisted of anhydrous and purified sulphate of magnesia, a small quantity of bicarbonate of soda, and tartaric acid, all ground with sugar to conceal the slight bitterness. A prophylactic teaspoon of Seidlitz Salt in the morning was the "first toilet of the organism," expelling the residue of digestion and organic life. This procedure saved the organism from the dangers of accumulating "fermentive and putrefactive substances" which favored the inception and growth of cholera germs as well as other serious diseases (22). The salt stimulated the intestinal tract and "washed it by a sort of interior perspiration;" it also permitted the liver to disgorge "while infusing into the blood with a new water a greater facility for oxidation" (23). Reflecting the views of the early humoralists, Burggraeve recommended the Chanteaud Seidlitz for its effect upon the distribution of fluids in the body. Good health and longevity depended upon an equal distribution of the "perpetual current" of body fluids. "The surface of our vital stream being

sometimes smooth, sometimes violently agitated," he wrote, affected health as well as moral character and temper. For these reasons he prescribed the salt for the bile and blood—the salt dissolving and carrying away the fatty materials of the bile, at the same time increasing "the ruddiness and fluidity of the blood, by forwarding its decarbonization." Without doubt, wrote one dosimetric advocate, the Seidlitz Chanteaud was "the best and safest of all aperient medicines (so-called), and will, in time, not only for its elegant and refined therapeutic uses, but also from its refreshing tendencies, command universal adoption" (24).

As a second line of defense against disease, dosimetrists recommended that those desiring vigorous health mix two granules of strychnine with their Seidlitz Salt in the morning, and then take several granules each of aconitine and digitalin in the evening. This practice, they guaranteed, would lower the fever "excited during the day," reestablish the physiological equilibrium of the sanguineous circulation, and bring repose to the body's functions in order for them to work properly on the following day. Like an echo of the earlier monistic theorist Benjamin Rush, dosimetrist advocate Samuel Eadon argued in 1887 that there was really only one cause of disease and only one disease, "a diminution and maldistribution of the nervo vital force and the consequent dilation of the capillaries." For this reason, he pointed out, there was but one object of the cure— "the restoration of a free and unimpeded circulation of the vital fluid and a semi-contractile state of the capillary or hair-like vessels of the system to their normal condition." This maintenance of the capillary blood vessels and the tonic state of the system thus became the basis of dosimetric therapeutics and strychnine the cornerstone of its preventive medicine (25).

Dosimetrists claimed that persons who regularly took two milligrams of the arsenate or sulphate of strychnine at bedtime would have a "vital resistance" capable of withstanding most diseases. Burggraeve particularly urged this habit for the aged, and he admitted taking three milligram doses of strychnine nightly for more than fifteen years. In those cases where a person who regularly consumed strychnine came into contact with infections or miasmatic fevers, he promised that strychnine would prevent the paralysis of the vaso-motor nervous system. The drug was also a parasiticide which brought "indemnity from miasmatic intoxications." In inflammations, strychnine treatment arrested the "phlogosic processes" by giving tension to the tissues and, at the same time, prevented the impoverishment of the red globules in the blood. These precautions against disease, which the dosimetrists identified as the "prophylaxis of maladies," formed in their minds one of the greatest conquests of therapeutic medicine, equal in importance to the discovery of preventive vaccination by the immortal Jenner (26).

The medical profession in the nineteenth century had for some time divided on the means of combating fever. Some regarded fever as an inflammation indicative of an excess of force, and tried to extinguish it by bleeding, counter-stimulants, alterants, evacuants, and cold water. Others argued that the febrile manifestations were due to poor circulation of the blood and treated the patient with excitants and sudorifics to raise the vitality. These latter medicaments, according to the supporters of dosimetry, were usually crude and impure; and while they stirred up the vital forces, their irritating nature allowed the patient to fall back again "still more weakened by their renewed and useless efforts" (27). Burggraeve argued that such medicines not only failed to arrest the disease but left the patient in a grave state of debility requiring weeks if not months of convalescence. His system of dosimetry, on the other hand,

promised to calm the functions of the body rather than throw the system into a state of perturbation (28). Since fever was "due to an arrestation in the circulation in the blood, caused by paralysis," or, in other words, a sluggishness of the vaso-motor nerves which controlled circulation, Burggraeve believed that by giving 'tone' to these nerves, physicians could arouse vitality, end the stagnation of the blood in the organs which had first caused the rise of body heat and inflammation, and return the circulation to its normal state (29). The alkaloids were not antagonistic but rather elective febrifuge remedies ("excito-motors") which opposed paralysis and inflammation of the vessels (30). In administering dosimetric medication at the onset of an acute disease, the physician could avert paralysis of the vaso-motor nerves, restore temperature, dissipate fever, and reopen the renal and cutaneous passages of the body. In effect, the dosimetrists interpreted the action of strychnine as proof of the theory of "electro-vitalism." The alkaloid acted upon the nerves in a persistent and physiological manner as a sort of "vegetable electricity" which, along with the indigenous animal electricity, helped to maintain the living organism (31).

In many cases, dosimetrists recommended the defervescent effects of aconitine and veratine to first lower the heat of fever, and then the vitalizing effects of strychnine to re-establish circulation. A combination of aconitine, digitalin, and strychnine, frequently called the "dosimetric trinity," was widely prescribed in diseases where the temperature exceeded 100.4 degrees. They were given every hour, every half hour, or every fifteen minutes according to the severity of the disease, and continued until profuse sweating was produced. According to Burggraeve, the key to the correct use of the "dosimetric trinity" was a precise understanding of the functional disturbances in the body in acute and chronic diseases. To obtain this understanding, he thought it indispensable for the physician to use a thermometer to follow the heat of disease (32).

Despite differences in practice, Burggraeve's dosimetric therapeutics had a common basis with the homeopaths who interpreted disease as a result of an "invisible change in the organism caused by a morbific non-material force." Medicinal agents were substances capable of causing symptoms analogous to those manifested by the disease. No matter how small the dose, the symptoms were more intense than those of the disease, since the disease was due to a non-material force.

> Now, as two similar maladies cannot exist at the same time in the same individual, the induced disease, produced by the medicine, destroys the spontaneous disease, and is in turn destroyed by the vital forces when the medicine is no longer given.... We are frankly vitalistic like the homeopathic school, and we admit with them that in a disease it is the totality of the symptoms that should be treated and that it is against the symptoms which the physician must first direct his efforts. The dosimetric physician does not believe that in treating the symptoms it is always necessary to oppose systematically similar means or systematically contrary like the allopaths. They do not believe because two axioms are true in such or such case they are false in such or such other....The dosimetric school does not therefore disturb itself with the two systematic rules of similia or contraria, rules too often disproved by facts. It takes advantages only of clinical experience. A medicine which has given good results in such or such disease, is employed each time that we have to contend with the same affliction. It is of very little importance whether that medicine acts by virtue of similia similibus or contraria contrariis. When it has demonstrated its efficacy that is sufficient, and its position is impregnable (33).

While Burggraeve borrowed Hahnemann's enmity for crude compounds, he interpreted the dictum to mean avoiding the complex formulae of the pharmacopoeia and replacing them with the alkaloids, the metallic salts, and the metalloids. At the same time, Burggraeve substituted a mathematically precise dose of granules which he

prescribed on the basis of the patient's vitality. By administering the alkaloids in fractional doses of known strength until obtaining the therapeutic effect, doctors could "jugulate" disease using the most active principles in the pharmacopoeia without endangering the patient's life with crude and dangerous drugs (34).

American Dosimetry

Physician Wallace Calvin Abbott (1857–1921) of Chicago, editor of the *American Journal of Clinical Medicine* ("The Alkaloidal Clinic") and founder of Abbott Laboratories, was one of the more successful imitators of Burggraeve's dosimetric pharmacy and therapeutics in the United States. Like Burggraeve, the Abbott Alkaloidal Company stood in opposition to the "isms" and "pathies" of nineteenth-century medicine. There was but one true medical man, according to Abbott, and he was the doctor who chose to use small and regulated doses of the most active remedies. Borrowing his thunder from European dosimetrists, Abbott campaigned to replace "promiscuous formulas," nauseous drugs, and "problematical remedies" with soluble granules given in precise and effective doses. In his *Alkaloidal Digest,* first published in 1893, Abbott listed five essential reasons behind the use of alkalometry (35):

1. It cures—where it is possible to cure—*cito, tuto et jucunde.* Its chemistry is done outside the sick body. It never produces "drug sickness."
2. It gives maximum results in the shortest possible time, with absolute safety and with no possibility of overdose, or cumulative effect.
3. It enables the practician to give the most potent medicines to the youngest infant, the most squeamish invalid, or the aged, without the aid of scales, measures or menstrua.
4. It enables the doctor to push a remedy exactly *to effect* without leaving him to wonder if he may not have poisoned his patient.
5. It makes it possible for the practician to have always with him sufficient standard medicaments of unchangeable strength and consistence for every possible emergency, and to practice the most certain, safe and sure method of medication at small cost. It eliminates "chance" and makes medicine as nearly "an exact science" as it is possible for it to attain.

"To clean out, clean up and keep clean," Abbott wrote, was the cornerstone of modern medicine. He believed that the medical profession had moved a long way toward therapeutic perfection—from the leech and lancet to the effervescent effects of Abbott's Saline Laxative, W-A Intestinal Antiseptic (counterpart to the Seidlitz Salt) and the granules of active principles used in alkalometry. The physician who went into the sick room with only a prescription pad was far less equipped than the alkalometrist who carried his own case of active granules. The Abbott laboratory offered complete services for the physician, supplying him with "The Alkaloidal Clinic" which discussed the latest treatment and drugs, intrepretive books such as *A Textbook of Alkaloidal Therapeutics* by William F. Waugh and W. C. Abbott, *Treatment of the Sick* by Waugh, *A Therapeutic Guide to Alkaloidal-Dosimetric-Medication* by John M. Shaller, and a variety of pamphlets written by Burggraeve and others on the essentials of dosimetric pharmacy and treatment. In addition, the company sold physicians over five hundred different granules, tablets, and tonics, a variety of instruments, and carrying cases for dispensing the alkaloidal medicines. Abbott also provided a laboratory for the examination of urine, blood, tests for poisoning, milk and water analysis and post mortems (36).

Like Burggraeve, the Abbott company sought to keep patients away from the local druggist by supplying medicines directly to the practitioner. Abbott (37) claimed that his granules could be purchased cheaply so that, if the physician charged a fair fee for his services, he would not have to peddle the drugs for a commercial price. "Look for extra calls and repeat visits," he wrote, "to pay for your drugs which they will do many times over."

If you find it necessary to prescribe a large quantity of any one preparation, and choose to fill the prescription yourself, that is a different thing, but do not get into the habit of giving a few granules and of charging "a dollar for the visit and twenty-five cents for the medicine." Never charge for the use of the tools you work with. Your clientele, when properly trained by yourself, will much more readily pay one dollar and fifty cents to two dollars for your services with the remedies included. Don't be a plumber: When you order a patron to lay in a supply of some material for your use, then he should pay for it—not you. The granules are cheap enough for any and every doctor to use what he needs for a case without charging for them. And besides, the careful, thoughtful, business doctor who looks after the welfare of his patrons and himself, and especially if he dispenses his own remedies, will find it essential to make more visits than the hit-or-miss, shotgun prescriber, and will the better please and the more rapidly increase his following by so doing. Not only this, but if he dispenses, and does it with tact, his office is ever full of those who, suffering from minor ailments, come to him for advice and "free" medicines, and would otherwise take some old "repeat" prescription to the drug store or try a ready-to-hand "patent" or secret proprietary nostrum of which they may know or which "the man behind the counter" may suggest.

Novel Treatments

In 1893, physician John Milton Duff of Pittsburgh read a paper before the American Association of Obstetricians and Gynecologists on the use of strychnine in obstetrics. His use of the drug was not altogether unknown, however, for physicians in both England and the United States had previously referred to the alkaloid as an aid in parturition and a substitute for ergot or tartar emetic. Duff believed that women who had been subjected to strychnine treatment before labor would not only suffer less shock from the throes of childbirth, but would submit more easily to an anesthetic than women without the preparatory treatment. "I have no hesitancy in asserting," Duff remarked, "that with the judicious use of strychnia, the indications for instrumental delivery will be far less frequent, and ergot will only occasionally be called for during or after the third stage of labor." He also believed that strychnine treatment during pregnancy reduced the number of abortions, and especially premature deliveries "by giving tone to the uterine muscles and nerves, as well as by its general tonic influence." It improved the woman's appetite and digestion, kept her bowels soluble, prevented insomnia, regulated circulation, and insured a rapid and painless labor. Then too, after-pains were less frequent and the danger of post-partum hemorrhages reduced (38).

One of the more unusual uses of strychnine was suggested in 1905 by A. B. Hughes, professor of materia medica and therapeutics at Keokuk Medical College. Because strychnine provided general stimulation to the entire nervous system and markedly increased muscular tone, he recommended that it be given to strengthen the pelvic organs of young girls entering the stage of puberty. "Just as exercise, by causing an increase of metabolism tends to increase the reserve of nerve energy, or in other words increase the power of resistance to disease," he wrote, "so does strychnine, by its power to increase muscular tonicity, tend toward that condition known to the laity as a strong constitution." Like many in the medical profession who objected to the 'new woman,' Hughes thought that young ladies were spending too much of their school and home life in intellectual endeavors and not enough in muscular activity, a situation which was tending to weaken the female constitution. The modern school girl was spending long hours at the piano, or attempting to solve problems of geometry, biology, and other mental disciplines which only exhausted her vital reserves of power. Physically tired, with scanty and irregular menstruation, she became afflicted with insomnia and "the fudge habit." He believed it important for the medical profession to oppose destructive "cerebral stimulations" which tempted the

'new woman' out of the home-circle, and encourage her "animal functions" to ripen into a "vigorous specimen of physical womanhood." Administered in small doses over long periods of time, strychnine, so it was said, worked "wonderful changes" in the woman's physical and mental condition. Its constant stimulation of the pelvic organs would cause "a rapid and splendid development." Then too, "the sallow skin will give way to a clear and healthy complexion, the lusterless eye will sparkle with interest, the narrow chest will round out, and the stooping, timid form will walk erect and confident" (39).

In addition to administering strychnine for the developing woman, Hughes also supported Duff's use of the alkaloid as a special stimulant during pregnancy. "The stimulation of the entire pelvic and abdominal viscera," he wrote, "will keep these organs up to near their standard of work." Strychnine would aid excretion, relieve constipation, and promote diuresis; it would also help prevent swollen feet and legs and, when labor began, would give the woman "a sense of euphoria which keeps her cheerful and of good courage." During childbirth, strychnine would render the uterine contractions strong and regular so that labor would be shortened, allowing the pelvic organs to return to their normal state quickly after parturition (40).

According to Hughes, strychnine also affected the life and development of the fetus. He believed that this was perhaps its greatest value. "In the economics of the world," he observed, "the life of the most value to the nation is the life which has before it the greatest number of years of usefulness." Because of this, he argued, "the most valuable asset in the storehouse of national wealth and power is the babe in arms, the babe endowed with strong powers of resistance." The influences which affected the mother were the same that helped to mold the moral, intellectual, and physical well-being of the fetus. For this reason, the course of treatment which the mother received during her pregnancy had direct bearing upon the prenatal growth and power of the fetus. Strychnine not only increased nutrition and metabolism in the mother, but it aided the same functions in the fetus, so that the increased activity of the fetus as a result of the mother's medication caused a greater physical growth and development in the child. The organs of nutrition, circulation, and locomotion were better developed in the fetus from the strychnine treatment. Because of these influences, "the child will thus carry, from its prenatal into its post-natal life, greater powers of resistance." For these reasons, Hughes administered small doses of strychnine daily during the last six weeks of pregnancy, and the results, he felt, seemed to verify his thesis. Children born of mothers who took the alkaloid treatment were "invariably strong, vigorous, and seemingly endowed with strong resisting powers" (41).

Throughout the nineteenth century, strychnine remained one of the most powerful of the vegetable bases in the physician's medical handbag. Its adoption by "dispensing-doctors" as one of the cornerstones of dosimetric therapeutics not only indicates changes occurring in the materia medica, but also explains early efforts to improve the quality and control of drugs through the power and advertising of industrial pharmacy. Amid the background of unregulated pharmaceutical practices in the nineteenth century which seemed, at least in part, to place the patient in the hands of "counter-diagnostics" as well as patent and proprietary drugs of dubious value, one can see the first steps toward self-reform. In the origins of dosimetry and its imitators rose one of the early movements for unifying the goals of chemist, druggist, and physician in a singular pharmaco-therapeutic program. The history of dosimetrics and the emphasis placed upon strychnine treatment

marked a trend toward standardized quality in products, an increasing concern for exactness in dosage, and an attempt to improve the image of the pharmaceutical industry in the absence of outside regulation. Dosimetry failed to achieve its goals largely because of simple economics. The success of the drugstore in capturing an ever-widening portion of the medicine market, and the realization by industrial pharmacy that it could find a more happy medium by selling to both the doctor and the drugstore rather than attempting to by-pass the latter, relegated dosimetry to a quaint but important role in the history of pharmaco-therapeutics.

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The Mysterious Disappearance of the Skeleton of Charles J. Guiteau[1]

By THOMAS N. HAVILAND, Ph.D.[2]

The skeleton of the assassin of President James A. Garfield is still in existence. It is almost certainly in Washington, D. C.

It is probably still housed in one of the government buildings there. And yet, it is equally certain that no one will ever again look on the skeleton of Charles J. Guiteau.

To explain this apparent paradox, we must go back to the night of July 3, 1882. Three days before, in the afternoon of June 30, Charles Guiteau had been hanged at the United States jail in Washington for his crime. His body was immediately taken from the north end of the jail, where the hanging had taken place, to the prison chapel. Here the Rev. W. W. Hicks of the Washington Tabernacle Church performed the burial services; an autopsy was performed immediately afterwards, and the following day the body was laid in a grave scooped out of the earth in the jail storeroom in the east wing, and the paving stones set back in place above it.

From a Washington dispatch in the *New York Times* of January 19, 1883, we learn that Guiteau had bequeathed his body to his spiritual advisor, the Rev. Dr. Hicks. But Dr. Hicks had executed a paper transferring his right and title to the body to Surgeon General C. H. Crane as the representative of the United States.

Late on the night of July 3, 1882, a covered wagon drove up to the jail. Several men alighted from the wagon and entered the building. After an interval of some time, the figures were seen to emerge carrying a long bundle which they deposited in the wagon and drove off through the quiet streets of Washington. The wagon entered the alley between 9th and 10th Streets leading from F Street and stopped at the rear of the old Ford's Theatre building, then the Army Medical Museum. The figures resumed their burden, and all entered the cavernous darkened building.

Strangely enough, the assassin Guiteau had reversely retraced the path taken by the assassin Booth after he had shot Abraham Lincoln. Other similarities of fate strike the recollection. Both had shot their victims from behind, both had had a horse or horse and carriage ready for their escape. Both had been interred for a short time beneath the floor of the jail, and both bodies had been conveyed back to this very same door at the rear of Ford's Theatre; and, even more strangely, the skeleton, or partial skeleton of both had come to rest under the same roof.

Guiteau in life was a nobody—a man of little education to whom few people were attracted. He was a self-styled lawyer, a fanatic in eccentric religious cults, pathologically self-centered, crafty, and completely unreliable in financial dealings. His wife had been forced to divorce him because of cruel treatment at his hands. At her merest questioning of his activities, he would fly into a rage, and on several occasions he locked her out in the hotel corridor in her nightclothes, once even locking her for the night in a cold broom closet in the hotel corridor. There is suggestive evidence that in his philandering he had contracted venereal disease which may possibly have finally affected his brain and might explain, to a

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degree, his later eccentric behavior and persecution complex. Thus, Guiteau in life.

Guiteau in death, or the prospect of death, was a different matter in which a number of people were interested in addition to the legal guardians of the U.S. and the anatomists of the Army Medical Museum.

After the hangman's noose had been slipped from his throat and his body placed in the crude prison-built coffin at the foot of the gallows, almost 300 people filed by to view his remains. Indeed, there were even some who were interested in his death while Guiteau was still alive and under trial. We learn from the *Philadelphia Press* of February 2, 1882—as early as four and a half months before the execution—that J. H. Ridgeway of Philadelphia had concluded a favorable agreement with George Scoville, Guiteau's legal counsel and brother-in-law, to exhibit the body of Guiteau after his hanging. Ridgeway was a manufacturer of refrigerators and refrigerating cars in Philadelphia and no doubt had an eye on the advertising potential for his wares as well as on the financial gain of the enterprise. Under the terms of the arrangement, Ridgeway was to have the exclusive right to exhibit the assassin's body, all resulting expenses to be assumed by him. To allay any expenses, one half of the profits resulting from the scheme was to be retained by "the exhibitor," while the other half was to go to Guiteau's relatives. This cold-blooded proposition was never brought to fruition.

A more forthright plan, without the sordid financial calculations, was one attempted by William Jones—"Bill Jones the Avenger." He was known as "a resolute man of strong impulses and determined character." He was further reputed to be a crack pistol shot and one of the best horsemen in the capital, and he had some of the fastest horses in the District of Columbia, according to the *Washington Star* of that time.

President Garfield died on September 19, 1881. On November 18, William Jones followed the van taking Guiteau from one of his trial sessions at the courthouse back to the jail. Just as the wagon left the Capitol grounds and was lumbering over the railroad tracks, the horseman pulled up to the side of the vehicle and fired his pistol. Then, putting spurs to his mount, he galloped along First Street. The van horses were vainly whipped into pursuit and Officer Edelin, seated by the driver on the van, fired at the fleeing target. The county officers at Boundary Street took up the chase and emptied their pistols at the flying horseman, but again in vain, because he disappeared from view before reaching the Maryland line.

Farmer Bill Jones was later apprehended and brought into the Second Precinct Station. Officer Edelin came in for identification and positively declared that this was not the man. However, Perry Carson, a guard on the rear of the police van just as positively said it *was* the man who had fired at Guiteau, but seeing no indication of his intention as he rode up, he felt he had no reason for drawing his own weapon.

The bullet fired at Guiteau passed through the side of the box, ripped a piece of Guiteau's coat and drew some blood on his arm, but aside from fear and excitement at the sudden chain of events, and the chase, no harm had been done.

In view of the conflicting statements of the witnesses, Jones's counsel, R. K. Elliott, advised him to refuse to admit anything and even to refuse to discuss the shooting, saying that the government would have to prove the charges against Jones. Jones, however, took some umbrage at the doubt cast on his reputation as an expert marksman and told a friend visiting him in jail that if he *had* undertaken the task, he would have done it better and finished the job.

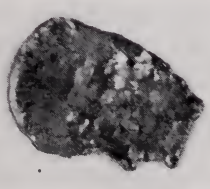
Hundreds of people reportedly declared themselves willing to post bail for Jones or

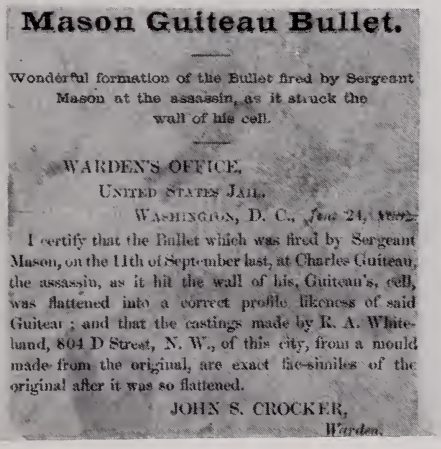
testify for him as soon as he would be brought up for trial.

"Bill the Avenger" was released on November 22 on $5,000 bond posted by E. G. Wheeler, a junk dealer, and Sebastian Aman, a restaurant owner. Jones was later acquitted.

Another would-be avenger was even more forthright in his attempt to kill Guiteau. George H. Bethard, one of the spectators at the trial, cooly and politely turning to the stranger seated beside him, asked if he could borrow his pistol. The man, a detective placed in the courtroom to forestall all such incidents and demonstrations, immediately placed him under arrest.

Perhaps the most nearly successful of the persons interested in Guiteau in death was Sergeant John A. Mason, Battery B, 2nd Artillery, U. S. Army. He had been assigned to the detail sent to guard the prisoner at the jail. The president's assassin was in the habit of peering for long periods of time out of one of the upper jail windows on 19th Street between B and C Streets. On September 11, 1881, eight days before Garfield died, Mason thought he saw Guiteau at the accustomed window. Raising his rifle, he fired, but Guiteau was not there or had just turned, for the ball flattened itself harmlessly on the wall.





Mason Guiteau Bullet.

Wonderful formation of the Bullet fired by Sergeant Mason at the assassin, as it struck the wall of his cell.

WARDEN'S OFFICE,
UNITED STATES JAIL,
WASHINGTON, D. C., June 24, 1882.

I certify that the Bullet which was fired by Sergeant Mason, on the 11th of September last, at Charles Guiteau, the assassin, as it hit the wall of his, Guiteau's, cell, was flattened into a correct profile likeness of said Guiteau; and that the castings made by R. A. Whiteland, 804 D Street, N. W., of this city, from a mould made from the original, are exact fac-similes of the original after it was so flattened.

JOHN S. CROCKER,
Warden.

FIG. 1. Souvenir facsimile of the bullet shot at Charles J. Guiteau by Sergeant John A. Mason.

Mason was arrested, tried at a court martial, convicted, sentenced to eight years in the penitentiary and remanded to that institution to serve out his time.

Mason had had a good record in the Union Army during the Civil War, was a married man and father of one child. By the populace, he was regarded as a hero and a martyr, and popular subscriptions procured quite a sum of money for "Betty and the baby." This sum was further augumented by the sale of souvenirs of the incident. In Mason's bullet, which had flattened itself on the cell wall, someone fancied that he saw a resemblance of the profile of Guiteau. Facsimilies of this ball were made and sold as replicas of the one fired by the unfortunate hasty Sergeant. The souvenirs were perforated at the top and were to be worn on the lapel to show that the wearer had contributed to the fund for Mason's family.

But what of the skeleton of Charles J. Guiteau? After the body had been resurrected by Dr. E. F. Schafhert, the anatomist of the Museum, and his assistants, and conveyed to the old Ford's Theatre, the body was skillfully dissected and the bones prepared for articulation into a skeleton. Some months later news of this leaked out, for in the *Washington Star* of May 15, 1883, it was reported that "the bones were taken and prepared for articulation, and, being in fine order for such purpose, it was supposed that some day or other Guiteau's skeleton would be placed in a glass case in the Museum, properly labelled."

It was fairly common knowledge among the clerks and employees of the Museum that Guiteau's bones were there, but only a

very few persons had ever been permitted to see them, and no one seemed to know their exact whereabouts.

The plan to articulate Guiteau's bones into a skeleton, and in a sense to glorify, and perpetuate him, was deemed inadvisable by the authorities, and shortly afterwards the Surgeon General, Dr. C. H. Crane, took them into his personal possession to make a disposal of them, a disposal of which he alone would know the secret. Dr. Crane did indeed carry the secret with him to his grave.

However, it was rather authoritatively surmised that the bones were still in the building, for several years ago a perusal of the records revealed that there was no record that the bones had ever been returned to the family. George Scoville, Guiteau's brother-in-law and lawyer at the trial, had stated after the execution that he had no interest in the assassin's will bequeathing his body, but that he "would like to see the bones decently buried." Again the archives show that there is no record of the bones ever having been buried, and certainly there is no record that the skeleton or parts of it had been placed on exhibition. Government law forbids the giving away of government property, which the bones certainly were. Medical and health laws prohibit the disposal of human bodies or parts thereof by throwing them out on the junk heap with other trash and refuse.

And so what did become of the skeleton of Charles J. Guiteau? What was the secret disposal of them carried out by Surgeon General Crane? All records and data affirm that the skeleton is still within the walls of the Museum, but why then can it not be found?

A later curator of the Museum agreed that Guiteau's skeleton was still probably there and undoubtedly surmised the correct solution of the secret of Dr. Crane's "disposal" of them. In the storage vault of the old Army Medical Museum were hundreds, perhaps thousands of human bones of all parts of the body—Civil War bones, recent bones, broken and diseased bones, tray after tray of them and tier upon tier, skulls, legs, vertebrae, ribs,. etc. Thus, perhaps, late one night, when all had left the Museum after closing time, Dr. Crane had taken his gruesome burden down to the storage vaults and, pulling out the trays indiscriminately, had placed a bone here, a bone there, skull here, femur there, until Guiteau, as an entity, ceased to exist. Quietly, the vaults were closed, the lights extinguished, and Guiteau's skeleton had disappeared, beyond all future resurrection by any anatomist, no matter how skilled and learned an expert.

Epilogue

A short time after the above was written, the author received a letter from a friend at the Army Medical Museum stating that in a recent movement of the Museum from one location to another, a wooden box had been found in which was an unnumbered, unmarked skeleton, lacking the skull. It was suspected that this might be the long-missing skeleton of Guiteau. The only reason this occurred to them, and their only means of identification, was a newspaper lining the box of bones of the approximate date of the Guiteau execution. Upon examination, the newspaper proved far too brittle and fragile to gain even a sketchy account of its contents, and newspapers of the time could have been used to line any number of old boxes of bones.

Thinking the matter might possibly be settled by scientific means, investigators subjected the bones to a number of anthropological measurements to determine a fairly accurate estimate of the height, weight and age of the person represented by the skeleton. But, a maddening series of coincidences arose to confuse the investigators.

Dr. Daniel Smith Lamb of the Army Medical Museum had performed the au-

topsy on Charles Guiteau. Upon Dr. Lamb's death at 86 years of age, he too had been autopsied and his skeleton prepared and retained at the Army Medical Museum. A record showed that, for some display reason, the bones of the right hand had been taken from the disarticulated skeleton and after a period of time had been lost. All skulls were routinely stored separately from the other bones, and Dr. Lamb's had been no exception, but it too had become misplaced.

The skeleton in the box lined with the crumbling newspapers was measured, and it was noted that the right hand was missing. The measurements of the long bones and of the innominates (hip bones) proved that the individual was a male, weighing approximately 125 lbs. and was about 5 feet 5½ inches (±1.5 inches) tall. The folder on Daniel S. Lamb's autopsy furnished the information that Dr. Lamb was 5 feet 6 inches in height and weighed 125 lbs. The case was closed; the skeleton must be that of Dr. Lamb and not Guiteau—but wait—the bones somehow seemed too solid and firm to be those of a man 86 years of age.

The statistics on Guiteau revealed the startling coincidence that he too was 5 feet 5 inches (Dr. Hamilton, one of the examining physicians, was to have said 5 feet 5¾ inches) in height, weighed about 125 lbs. and was about 40 years of age. To use the measurements as a criterion for identification was useless. Age determination was thus to be the deciding factor. Endocranial closure of the sutures of the skull provide a fairly reliable time-table for estimation of age—but the skulls of both Lamb and Guiteau were not available. The articular surfaces of the pubic symphysis yield some information on age but is much less reliable than endocranial suture closure for adult specimens. The pubic articular facets indicated a person in the fourth or fifth decade of life. Dr. Lamb was thus tentatively ruled out, but Guiteau's identity was not too firmly established.

And so there is still the possibility of a Mysterious Disappearance of the Skeleton of Charles J. Guiteau, but the following factors must be considered:

1. The skeleton could be that of any unhistoric person. Many boxes to hold bones may have been lined with newspapers of the time to prevent loss of small bones of the hands and feet. The boxes were routine wooden containers such as baking soda or soap boxes. Bones and skeletons (i.e., from Indian territory or forts) were often sent to the Army Medical Museum and repacked on arrival.

2. The skeleton could be that of Dr. Lamb, but this possibility is in doubt because of age.

3. The skeleton could be that of anyone of similar build to Guiteau, purposely planted in a box lined with a newspaper of the time of execution, to mislead anyone trying to locate the actual skeleton of Guiteau.

4. The skeleton, missing the right hand, could be that of Guiteau—a strong possibility but still definitely not proven.

Perhaps the real identity will never be revealed until the Heavenly Rearticulation of bones occurs at the sounding of the Last Trumpet.

Concepts of Epilepsy in Seventeenth-Century England

By ROBERT F. KRAUS, M.D.*

RECENTLY I had opportunity to examine three seventeenth-century medical works in the Edgar Fahs Smith Memorial Collection in the History of Chemistry of the University of Pennsylvania. The first two, *Synopsis Medicinae* and *Collectanea Medica* (1, 2), are texts by William Salmon, M.D., which deal with the diagnosis and treatment of a variety of common disorders from both the theoretical and practical standpoint. The third, *Natura Exenterata* (3), is pseudonymously written and appears to be a compendium of various folk remedies. On a list of endorsers and originators of the remedies described appears the name of Sir Walter Raleigh.

These works offer an interesting insight on two different levels into the neuropsychiatric theory and practice of the time. Salmon, a practicing London physician, presents clinical observations and discusses pathology and therapy in the humoral and astrological frames of reference then current. The *Natura Exenterata,* an essentially unscientific specimen of folk medicine, is representative of the culture and, as such, provides a backdrop against which Salmon's ideas can be evaluated in better perspective. Thus, the two different levels of conceptualization complement and clarify one another. It is the purpose of this paper to present and discuss the humoral, and to a lesser extent, astrological concepts in Salmon's work as exemplified by his writings on a specific disease, epilepsy. Selections from the *Natura Exenterata* relevant to epilepsy will also be included for purposes of comparison.

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William Salmon, M.D., Clinician

William Salmon (1644–1713) was an irregular London practitioner who lived near Smithfield Gate of St. Bartholemew's Hospital and built up a practice among those to whom admission or attendance could not be granted. Salmon was no relation to his famous medical contemporary who bears the same last name. He was rather a busy everyday clinician of his era and vanished into obscurity with it. Standard works in medical history make no mention of him (4, 5, 6). The limited information available indicates that he was an active man of varied interests. He treated all diseases, sold special medications of his own manufacture as well as drugs in general, cast horoscopes and professed alchemy. His travels carried him to the Continent, New England, and the Indies and his home contained many curios and mementoes of these travels as well as a large library, two microscopes, mathematical instruments, a set of Napier's bones, and Dutch works of art (7). His bibliography includes some dozen books on such topics as medicine, the art of engraving and etching, religion, prophecy, philosophy, and herbs (8).

Humoral and Astrological Concepts of Epilepsy

The theoretical content of *Synopsis Medicinae* and *Collectanea Medica* is primarily humoral in nature. This theory, which dates back to Empedocles, Hippocrates and Galen, postulated that the universe was made up of four elements: earth, air, fire

and water. The corresponding humors in the human body were classified as cold, dry, hot, and moist. Health was characterized by the balance of these humors. Disease resulted when one or more was present in excess. Treatment was predicated on the application of humor opposite to the excessive one. With regard to the humors of the body, blood was felt to be hot and moist, phelgm cold and moist, yellow bile hot and dry, and black bile cold and dry. Men were believed to show a balance towards one humor and were thus classified characterologically as sanguine, phlegmatic, choleric and melancholy (9).

Epilepsy, or the "falling sickness," is a disease known since antiquity and recorded in all times and cultures. Hippocrates (10) discussed it at length and in each generation scientists have attempted explanations. Some students of the problem feel that the history of epilepsy constitutes the history of scientific theories of brain function. Convulsive phenomena were evidently common in seventeenth century London. Salmon described and classified them, speculated as to their etiology, and proposed various treatments, presenting numerous case illustrations to demonstrate his points. His abilities insofar as direct observation is concerned leave little to be desired (11):

> The falling sickness is a convulsion of all the parts of the Body by Fits, hurting the Senses and the Mind.... When the Fit cometh, the Sick fall down, are plucked up together, tremble, turn about, snort, cry out and foam at the mouth ... they make a kind of Roaring or Howling noise, collision or clashing their teeth together, fast shutting and holding together of the fingers, Insensible Issues of the Urine Ordur and c. and foaming at the mouth like unto the white of an Egg.

In his discussion of etiology he proposes three factors: 1., heredity, 2., the configuration of the planets at the time of birth, and 3., accidental, which evidently comprised cases of unknown cause (12). His discussion of the various types of seizure reflects a fairly broad experience. He recognized the acute and chronic as well as the focal and generalized forms of the disease and was familiar with those seizures which were periodic or cyclic in occurrence, a phenomenon which he attributed to the phases of the moon. The present day concept of "primary" and "secondary" seizures was also in his thinking, there being a type of seizure "... which is such in its own essence and epileptick disposition of the brain...," while "... another is by consent of some other parts, from a preceding cause in the inferior parts made thin and elevated into the head" (13). He noted that some seizures were characterized by the absence of the subjective, premonitory phenomena referred to in modern terms as "aura" and also noted that some attacks were not followed by amnesia. As "preceeding causes," he mentioned stomach disorders, infestation with worms, gynecological problems and external injuries. Seizures in infants were classified separately (14).

While his clinical observations seem valid and with minor modifications and corrections might well compare with accounts in present-day texts, his concepts of pathology faithfully mirror the medical thought of the time (15):

> It is caused by gross Flegm, or sharp cholor, obstructing the Spirits passage in the Ventricles of the Brain: or from vapours ascending from the stomach ... a thin and frothy vapour which within the Brain pulls or twinges the principal Nerves and so thereby introduces a streightening of the Passages for which there follows a drawing back and shutting up of the Animal Spirits (which cause sense) from defect of which there follows all the symptoms of this disease and by which the parts suffer a convulsive motion.

The seizure, then, is caused by obstruction of the free circulation of humors within the brain. This may be primary, due to phlegm in the ventricles, or secondary, in which case a vapor rises to the head from some other diseased organ. The aura, he

believed, was due to the vapor elevating into the head, and one criterion for differentiation between seizures which had their origin in primary disorder of the brain and seizures which were due to disease in some other part of the body was absence of the aura in the former.

Seventeenth-Century Pharmacotherapy

Salmon presents a variety of remedies for epilepsy with illustrative case material. The rationale in therapy becomes more understandable if one remembers that it is based on seventeenth-century humoral concepts of pathology. As has been stated, disease was felt to be the result of an excess of one or more of the four humors: blood, phlegm, yellow bile, and black bile. Treatment was, therefore, directed toward the removal of the excess so as to restore equilibrium. Within this frame of reference, medicines were classified according to the four qualities of hot, dry, cold and wet and selection of medicine was determined by its possession of a quality opposite to the excess humor involved. For instance, senna leaves (hot and dry) were favored for the treatment of diseases due to an excess of phlegmatic (cold and wet) humors. Medicines tended to be classified according to their evacuant qualities, resulting in such categorizations as vomits, purges, diuretics and sudorifics (16). Salmon presents the case of a man cured of an epilepsy caused by a "melancholy humor" by the administration of antimony powder in wine. The treatment "wrought both upwards and downwards bringing away much clammy or viscous phlegm mixt with melancholy and so he was cured of this cruel disease" (17). A rather intractable case of epilepsy in which seizures were preceded by various gastric complaints was diagnosed as originating in the stomach and was cured by the administration of an "easy vomit" which was taken "every day fasting for a year." This mixture of four ounces of the "the decoction of dried tobacco" and one ounce of "oyl of sweet almons" would cause the patient to go "twice or thrice to stool," where he "voided much clammy and phlegmatick excrements by vomit and broke wind upwards" (18).

Salmon was evidently somewhat of an eclectic; he was well versed in humoral pathology but was also familiar with astrological concepts and used them frequently in his practice. As has been noted, he felt that one type of epilepsy was caused by the configuration of the planets at the time of birth. He also felt that the course of the disease could be influenced favorably or unfavorably by astrological factors and made frequent correlations between the incidence the seizures and the phase of the moon. He felt that "Peony gathered under its proper constellation, vis. when the moon is descendant in Aries does remove the falling sickness only by external application." He cites the case of an 18-year-old girl whose seizures did not respond to ordinary measures but who was cured simply by wearing peony thus gathered around her arms. "Hence it is apparent of what consequences Astrology is in the Practice of Physick" (19).

Folk Medicine, The Magical Background

Fanciful as Salmon's concepts of treatment may seem to the casual observer, closer inspection reveals them to be the logical result of an internally consistent integration of clinical observations and classifications, with prevailing ideas of etiology, pathology, and physiology. The relative sophistication of the thinking of this practicing physician becomes more apparent when it is contrasted with material presented in *Natura Exenterata.* This book evidently represents a conglomerate of the folk medicine concepts and remedies of that time. Its primitive, magical alchemical character is immediately apparent. Two remedies for seizure are as follows (20, 21):

Also the skull of a dead man, whereon moss groweth, being taken and washed very clean, and dryed in an Oven, and then beaten to powder, will cure this infirmity be the disease never so antient, but the skull must be of one that hath been slaine; or died suddenly, or of one that was hanged.

Take the jawbone of a man or a woman and beat it into a fine powder, and if a woman have the falling sickness, then use the jawbone of the man; and if it be a man then use the jawbone of a woman so much of the powder a will cover a six pence, put it into wine or any other liquid thing which you shall like of, and drink it; you may use it often as you will, but especially at spring and fall.

Salmon's systematic (albeit incorrect) attempts to integrate clinical observation, humoral theory and therapy seen in juxtaposition with such enigmatic concepts as powdered skulls, ". . . The Egg of a wilde Raven . . ." (22), and ". . . the brains of a Wesel . . ." (23) give, I think, an interesting portrayal of the status of learning in his time. The seventeenth-century medical scene was a rich and turbulent one. The magic and superstition of the Dark Ages persisted in less sophisticated circles. In everyday practice, the humoral concepts of Galen, revived and redefined during the Renaissance, held sway. Also, one can see the beginnings of the great modern medical systems in the attempts of such men as Sylvius and Avillis to incorporate into clinical medicine the newer findings of chemistry and physics (24).

Summary

The writings of a busy seventeenth-century English physician reveal that episodic alterations of consciousness were commonly seen in clinical practice. Diagnosis and treatment were based upon humoral and astrological theory. A folk medicine heavily tinged with magic existed side by side with the scientific medicine of the day.

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Presentation of Jane M. Oppenheimer, Ph.D. for Honorary Fellowship*

By FRED B. ROGERS, M.D.

President Sturgis, Fellows of the College, and guests:

I am privileged to introduce for Honorary Fellowship Dr. Jane Marion Oppenheimer, Professor of Biology at Bryn Mawr College.

A long-time friend of The College of Physicians of Philadelphia, Dr. Oppenheimer has used its library and donated to its collections. Interest in our Section on Medical History led to her reading several papers at its meetings. She presented the 22nd Kate Hurd Mead Lecture here in 1971, its title being, "Historical Relationships between Tissue Culture and Transplantation Experiments." This lecture reviewed two areas of scientific investigation which have been major concerns during her own career.

After graduating from Bryn Mawr College, Jane Oppenheimer pursued studies at Yale University with Dr. John S. Nicholas, and Dr. Ross G. Harrison, who achieved fame for his pioneer work in developmental anatomy and tissue culture. She received her doctorate from Yale for research in histology and embryology and held postgraduate fellowships there and at the University of Rochester before returning to her *alma mater* as a faculty member in 1938. Promoted to professor of biology twenty years ago, she has spent much time in a research room named for Dr. Martha Tracy, a member of the BMC Class of 1898 and former dean of The Medical College of Pennsylvania.

During her thirty-five years on the faculty at Bryn Mawr College, 'Miss Opp', as she is known affectionately by students there, has been a favorite teacher of its premedical group. All of us appreciate the quality of the scholars that go to medical schools from her classroom and laboratory. Prof. Oppenheimer continues a tradition in the Department of Biology at Bryn Mawr that has included such intellectual giants as Jacques Loeb, Thomas Hunt Morgan, E. B. Wilson, and Marcella Boveri. Her research on factors controlling differentiation in the embryos of bony fishes is often cited. In 1971 she received the Wilbur L. Cross Medal of the Yale Graduate Alumni Association.

Dr. Oppenheimer's professional activities have been national and international in scope. In 1966–67 she was visiting professor of biology at The Johns Hopkins University. She served as an exchange professor at the University of Paris Faculty of Sciences in 1969. During the past several summers she has worked at the Brown University Division of Biological and Medical Sciences in Rhode Island, near her house at Saunderstown on Narragansett Bay. Her activities have also included being secretary of Section L (History and Philosophy of Science) of the AAAS, president of the American Society of Zoologists, member of the History of Life Sciences Study Section at the National Institutes of Health, and Council member of the American Association for the History of Medicine.

In the realm of scholarly editing, translation and authorship, Jane Oppenheimer also is distinguished. She has served on the editorial boards of *Biological Abstracts, Quarterly Review of Biology, Journal of Morphology, Excerpta Medica,* and *American Zoologist.* With Benjamin H. Willier she edited a volume, *Foundations of Experimental Embryology* (1964). Articles from her pen on various subjects were

* Mitchell Hall, The College of Physicians of Philadelphia, 7 February 1973.

FIG. 1. Prof. Oppenheimer (2nd from right) receives certificate of honorary fellowship from Dr. Katharine R. Sturgis in the presence of President Emerita Katharine E. McBride of Bryn Mawr College (left) and Dean Elizabeth R. Foster of its Graduate School of Arts and Sciences (right).

collected in a book, *Essays in the History of Embryology and Biology*, published by the MIT Press in 1967. An exhibit of these writings can be seen in our College foyer display case this evening.

Madam President, I am pleased to have the honor of presenting to you on behalf of the Censors and the Council of the College, Prof. Jane M. Oppenheimer as Honorary Fellow.

Memoir of M. Royden C. Astley, M.D.
1911-72

By ROBERT S. BOOKHAMMER, M.D.

Royden Astley, invariably Roy to his host of friends, was born into and nurtured by a medical environment. Both parents were physicians. His mother was a member of the Board of Managers of the Woman's Hospital and for a time its president. His father, George Mason Astley, in his later years was emeritus professor of surgery in the School of Medicine of Temple University. Because of his father's long membership in The College of Physicians of Philadelphia (1920–54) Roy was particularly gratified to have been elected to the College as a non-resident Fellow in 1971.

On July 7, 1972, Dr. Astley died while visiting his sons and their families in Boston, Massachusetts. His wife, the former Edna Lockhart, and two sons, M. Royden C., Jr., and Malcolm L., survive. A sister, Mrs. Herbert M. Rivers of Pittsburgh, Pa., and a brother, Wayne C. Astley, of Villanova, Pa., also survive.

Dr. Astley was educated at Penn Charter School and the University of Pennsylvania, from which he received an A.B. in 1932 and a medical degree in 1936. Following an internship at the Philadelphia General Hospital, there were seven years of general practice with appointments in surgery at the Philadelphia General Hospital, Temple University Hospital and the Woman's Hospital of Philadelphia.

Dr. Astley's abiding interest in the human condition led him to the study of psychiatry at The Institute of the Pennsylvania Hospital as a resident and then to the study of psychoanalysis at the Philadelphia Psychoanalytic Institute from which he was graduated in 1950.

After six years of practice in psychiatry and psychoanalysis in Philadelphia, Dr. Astley was appointed to be a training and supervisory analyst and was called to Pittsburgh to be professor of psychiatry of the School of Medicine of the University of Pittsburgh and to participate in the development of the Pittsburgh Psychoanalytic Institute, whose director he was from 1961 until his death.

Dr. Astley was active in the administrative affairs of psychiatric and psychoanalytic organizations, local, state and national. He held the presidencies of the Pennsylvania Psychiatric Society in 1959–60, the Pittsburgh Neuropsychiatric Society in 1965–66, and the American Psychoanalytic Association in 1969–70. He was a consultant to the Bryn Mawr School of Social Work and to the University of Pittsburgh School of Social Work, and visiting professor at the Carnegie-Mellon University, visiting lecturer at the Duke University Psychoanalytic Institute and the Philadelphia Psychoanalytic Institute.

Roy was a studious and concerned person with a tremendous capacity for the acceptance and completion of the many arduous tasks which came his way in recognition of and tribute to his clarity of thought and expression. One of his friends recently characterized him as having been a passionate intellectual, scholarly and courtly, with an independence of mind, a strength and vigor of leadership, balanced, fair and careful in his approach to all questions. Soon to be in print will be "Psychoanalysis and the Future," the text of his presidential address

This memoir was prepared and published at the request of the Council of The College of Physicians of Philadelphia.

before the American Psychoanalytic Association. This paper, of all his writings, best exemplifies the intellectual spirit and depth of understanding we all admired in our colleague.

Those of us who were close to Roy for many years were ever eager for those all-too-infrequent informal evenings of good talk far into the night and were recurrently refreshed by his amazing fund of poetic and literary quotations which enlivened our discourse. We shall miss him. He left us too soon. There was much more he wanted to accomplish.

Memoir of William J. Hitschler, M.D.
1904-72

By R. MARSHALL TRUITT, M.D., F.A.C.P.

William Jacob Hitschler, M.D., was born on December 27, 1904, the son of William A. Hitschler, M.D., and Florence Eisenhardt Hitschler. His father was an otolaryngologist on the staff of what is now Temple University Hospital, and died while his son was still in college.

The son received from the father a scientific turn of mind, but did not at first become a physician like his father. He was graduated from Haverford School and then entered Princeton University. While there he majored in chemistry but was also active in extra-curricular activities, which included travelling around the country with the Triangle Club, the musical dramatic organization, of which he was manager. In 1927 he was graduated from Princeton and continued in the field of chemistry, teaching at the University of Pennsylvania, which conferred on him the Master of Science degree in 1929.

However, he was not content to be a chemist. His father's example and his natural inclinations caused him to enter the School of Medicine of the University of Pennsylvania.

While in medical school he did some research under Dr. Elliot Round Clark, professor of anatomy, who was studying the growth of tissue in the ears of rabbits by watching the growth through plastic windows.

June, 1933, was a banner month for him, as he married Josephine E. Jones, and received his M.D. degree. Immediately thereafter he started a two-year internship at the Pennsylvania Hospital.

Once more he followed in the foot-steps of his father by going into the specialty of otolaryngology. Two years at the Graduate School of Medicine of the University of Pennsylvania prepared him for a distinguished career in this specialty.

He became an associate in otolaryngology at Jefferson Hospital and chief of otolaryngology at Germantown, Chestnut Hill, and Abington Memorial Hospitals. He was also chief of laryngology at the Pennsylvania School for the Deaf.

Besides being a fellow of The College of Physicians of Philadelphia, Dr. Hitschler was a diplomate of the American Board of Otolaryngology, a member of the Philadelphia County Medical Society, the Philadelphia Laryngological Society, the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otolaryngological Society (known as the Triological Society).

Dr. Hitschler did graduate work in allergy; he studied fenestration and stapedectomy under Limpert.

Outside the field of medicine he was very active. He was a lover of the out-of-doors, from camping and canoeing in the North Woods on the one hand, to golfing on the links around Philadelphia on the other.

His accomplishments are the more remarkable because of being dogged by considerable ill health starting in his intern days and finally by a near fatal automobile accident which occurred while returning from a golf game. With great courage, he recovered sufficiently to resume his practice but not his golf.

Dr. Hitschler is survived by his wife, by a son, William Anthony Hitschler II, and by two daughters, Christine R. Farah and Josephine E. Roberts.

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Memoir of Merle M. Miller, M.D.
1903-72

By GEORGE I. BLUMSTEIN, M.D.

Dr. Merle M. Miller, a Fellow of The College of Physicians of Philadelphia since 1939, died suddenly on February 26, 1972, while vacationing in Florida.

Dr. Miller was born in Chambersburg, Pennsylvania, on July 6, 1903, and received his B.S. at Haverford College in 1926 and his M.D. at Jefferson Medical College in 1930. After an internship (1930–32) at Germantown Hospital, Dr. Miller took postgraduate work in allergy with the late Dr. Will Cook Spain in New York before associating himself with a 1916–43 Fellow of the College, the late Dr. Harry B. Wilmer, in the practice of allergy.

Dr. Miller had volunteered his services to the U. S. Navy for duty in World War II and was being processed for induction in 1943 when Dr. Wilmer's demise made it essential for Dr. Miller to remain in civilian life and take over the numerous hospital clinics under their aegis as well as a vast private practice.

Dr. Miller loved to teach and was proud of his academic affiliation with the Graduate School of Medicine of the University of Pennsylvania, where he was associate professor of allergy. He also served as chief of allergy at the Abington Memorial Hospital, Germantown Hospital, Presbyterian Medical Center and the Wills Eye Hospital and was consultant in allergy to the Bryn Mawr Hospital. He was a constant source of inspiration to the house staff in all of these affiliations, befriending, socializing and influencing many of them to enter the field of allergy. In this capacity he not only acquired favorable residency appointments for them, but helped them find choice locations in which to practice.

Besides taking delight in the give and take of his teaching assignments, Dr. Miller found time to satisfy his medical curiosity by participating in investigative work. The result of his research work frequently contributed to the scientific programs of local and national allergy societies and were eventually published in numerous prominent medical and allergy journals. One in particular deserves attention (J. Allergy *8:* 77, 1936–37) because it deals with the treatment of asthma by an adrenal cortical hormone. The results were so unbelievably and uniformly good that many of the discussants found it necessary to criticize the protocol that permitted other drugs to be administered in addition to the adrenal cortical extract. In retrospect, there is a strong possibility that these early, crude extracts contained traces of cortisone sufficient to account for the excellence of their results.

Dr. Miller was acutely aware of his social responsibilities, serving for many years as a pillar and vestryman of his place of worship, the Memorial Church of the Good Shepherd, as a trustee of the Harrison Foundation and as director of the Allergy Foundation of America and a member of its executive committee. He was also a member of the Union League of Philadelphia, Sons of the Revolution, the Bath Club, the Philadelphia Cricket Club, the Sunnybrook Golf Club, the Miegs Society, Philadelphia County Medical Society, Pennsylvania Medical Society, American Medical Association, and a Fellow of the American College of Physicians, The College of Physicians of Philadelphia, American Academy of Al-

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lergy and the American College of Allergists. He was one of the original members of the Philadelphia Allergy Society and served as its president. In recognition of his long and devoted services to the American Academy of Allergy, he was rewarded by election to high office, serving as its vice president in 1970–71.

Dr. Miller was proud of his affiliation with the College and supported its activities to the fullest. Throughout his long association, he served on many of its committees and was chairman of the S. Weir Mitchell Associates for the three years prior to his death.

Merle's cherubic appearance, infectious smile and perpetual optimism were a constant source of comfort and confidence to his wide circle of friends, patients and colleagues. He was charitable to a fault and self-effacing in all his endeavors, never hesitating to give of himself or his resources for a worthy cause and seldom making known his own contributions. His passing will leave a void in the field of allergy to his numerous patients, pupils and associates and among his many friends.

He is survived by his wife, Buvel Folwell Miller, and by two step-sons, Charles W. Mather, III, and Victor C. Mather, II.

Memoir of Laurence Bender Rentschler, M.D.

1910-72

By JACOB H. VASTINE, 2nd, M.D.

Laurence Bender Rentschler was born on December 26, 1910, in Columbia, Missouri, the son of Dr. and Mrs. Harvey C. Rentschler. He died on August 9, 1972, after a long illness, ironically from the disease in which he was so active in its diagnosis and therapy during his entire professional life. Dr. Rentschler probably inherited his interest in science, his father having been the head of the research department of the Westinghouse Electric Company. His father and several other prominent scientists developed the atomic bomb which terminated the war with Japan.

Dr. Rentschler was educated at the East Orange High School, East Orange, New Jersey, after which he attended Princeton University from 1928 to 1932. He had many talents. He was manager of the Princeton University Orchestra, a member of the Triangle Club and photographer for the *Daily Princetonian*. He had many fond memories of his life at Princeton, one of which was rooming with Jimmy Stewart when the Triangle Club was on tour.

After graduation from Princeton, he continued his education, obtaining a master's degree in physics from Columbia University in 1934. He attended Temple University School of Medicine, from which he was graduated in the class of 1938. He served his internship at the Geisinger Memorial Hospital in Danville, Pa. He then spent two years in the Graduate School of Medicine of the University of Pennsylvania.

After receiving his degree in radiology from the University, he was associated with the late Dr. George E. Pfahler in his private office and with the author in the Department of Radiology of the Woman's Medical College and of Presbyterian Hospital. He was head of the Department of Radiology at the Pottstown Memorial Medical Center from 1941 to 1955. He was head of the Department of Radiology at the Memorial Hospital of Roxborough from 1942 until 1970, when ill health forced his retirement. While at Roxborough, he organized a Department of Nuclear Medicine.

Dr. Rentschler was an active member of the Philadelphia Roentgen Ray Society, the American Radiologic Society, the Radiologic Society of North America and the American College of Radiology. He was a diplomate of the American Board of Radiology. He was a member of the local, state and national medical associations. He was elected to the Fellowship of The College of Physicians of Philadelphia in 1951.

He was on the Advisory Committee when the Metropolitan Opera Company formerly visited Philadelphia. In addition to his busy professional life and his interest in music, he had several hobbies, principally photography, horticulture, raising orchids and camellias and creating works of art with stained glass

He was a deeply religious man. He and his family attended the Ardmore Presbyterian Church where he was an elder from 1958 until his death. He was a devoted family man. On August 7, 1937, he and Miss Melva D. Danehower were married. They shared thirty-five years of happiness and raised three children: Anna (Mrs. Barry Gibson), Adele D., and Harvey D. Rentschler, a senior at the University of Tennessee.

He is survived by his wife, his three children and two grandchildren. His untimely death will leave a void in the lives of his family, his colleagues, his many friends and innumerable grateful patients.

This memoir was prepared and published at the request of the Council of The College of Physicians of Philadelphia.

Memoir of Edward Arman Schumann, M.D. 1879-1970

By JOHN B. MONTGOMERY, M.D.

Edward A. Schumann, well known emeritus professor of obstetrics at the University of Pennsylvania, died at his home in Lafayette Hill, Pa., on October 18, 1970. He was ninety-one years of age.

Born in Washington, D. C., on July 9, 1879, he was educated in Philadelphia where he was graduated from Central High School in 1897 and from the School of Medicine of The University of Pennsylvania in 1901. Following internship in the Philadelphia General Hospital (1901–03), he became associated with the Gynaecean Institute where he served for two years as a pathologist under Dr. Joseph Price and with The Gynaecean Hospital where he came under the influence of Dr. Charles P. Penrose and Dr. J. M. Baldy.

With this background of training, Dr. Schumann progressed rapidly in his specialty. During his career he was obstetrician and gynecologist to the Roxborough Memorial Hospital, the Chestnut Hill Hospital, the Frankford Hospital (where he established the first obstetric clinic), the Jewish Hospital, the Episcopal Hospital and the Philadelphia General Hospital, where he served from 1914 to 1942. From 1911 to 1924 he was lecturer in obstetrics in the Jefferson Medical College under Dr. E. P. Davis. He resigned in 1929 to accept a position at the University of Pennsylvania, where he was advanced to Professor of Obstetrics in 1933. In 1931 Dr. Schumann was appointed chief at the Kensington Hospital for Women in Philadelphia, which was established originally by Dr. Howard Kelly. Here he developed a fine training program which attracted numerous young men, some of whom have become leaders in obstetrics and gynecology.

Throughout his career Dr. Schumann contributed consistently to the literature of his specialty. Perhaps his most outstanding work was his monograph on *Endometriosis,* published in 1926. His presidential address to the American Gynecological Society in 1947 is important because it clearly demonstrates his scholarly background, his sense of humor, his modern progressive thinking in the realm of medical teaching and practice and his broad cultural interests for lack of which he did not hesitate to chastise gently his fellow physicians. He excelled as an extemporaneous speaker and in informal discussions. His rich, deep, melodious voice, his ready command of the English language, his scholarly background and his store of medical anecdotes and stories, together with his sense of humor and a serious philosophical turn of mind and sometimes his cynical or critical point of view, enabled him to captivate and delight his audience.

Throughout his life Dr. Schumann had a serious interest in natural science. This led, among other things, to an early association with the Academy of Natural Sciences of Philadelphia and with the Philadelphia Zoo, where he served sometimes as a consultant, and where in earlier days he worked in the Penrose Laboratory (established by his former chief, Dr. Charles P. Penrose) under the direction of Dr. Herbert Fox. The breadth of his interests is further demonstrated by his collection of sea shells, his interest in raising prize-winning pigeons,

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bantam chickens, as well as his studies of the culture of the American Indians in the Southwest.

Dr. Schumann had more than a passing interest in art and music He attended the first concert of the Philadelphia Orchestra in 1900 and seldom missed a regular Saturday performance.

On June 8, 1910, Dr. Schumann married Miss Hazel Prince, a concert pianist, in Lexington, Mass. They had three sons, Edward A., Jr., an engineer in Spain, Francis, a physician, and Robert, a Philadelphia businessman.

In 1948 Dr. Schumann retired to the farm in Bucks County, where he and Mrs. Schumann enjoyed the quiet country life, which provided increased opportunities to develop his hobbies as a naturalist. Here he kept in touch with his colleagues and welcomed old friends who came to talk and reminisce.

Report of the Secretary for the Year Ended December 31, 1972

Stated Scientific Meetings and Regular Business Meetings:

Dates	*Lectureships*	*Attendance*
*January 5, 1972	The 54th Nathan L. Hatfield Lecture Donald M. Small, M.D. "The Basis of Gallstone Formation"	172
March 1, 1972	The 4th Theodore F. Bach Memorial Lecture Paul Kotin, M.D. "Epidemics of the Future"	92
April 5, 1972	Mary Scott Newbold Sponsored Symposium Moderator: Luther L. Terry, M.D. Panel: James A. Cleland, D.D.; Doris A. Howell, M.D.; Jonas Robitscher, J.D., M.D. "The Right to Die"	250
*May 3, 1972	The 9th Hira S. Chouké Lecture Hugh J. C. J. L'Etang, B.Ch., D.I.H. "Diseases, Decision-Makers and Doctors"	127
October 4, 1972	The 102nd Mary Scott Newbold Lecture Harry Schwartz, Ph.D. "Medicine Through Non-Medical Eyes"	167
*November 1, 1972	The 55th Nathan L. Hatfield Lecture Richard J. Herrnstein, Ph.D. "I.Q.: Social Goals and the Genetic Heresy"	360
December 6, 1972	The 81st Thomas Dent Mütter Lecture Robert A. Good, M.D., Ph.D. "Immunology and Organ Transplant"	147

**Special Announcements Made at Regular Business Meetings:*

January 5, 1972: Results of Balloting for Officers and Elective Committees.
Results of Balloting Approval of Amendment to By-Laws, Chapters II through IX.

May 3, 1972: Results of Balloting for Officers, Censors, and Elective Councillors (in accordance with changing date of election to co-incide with fiscal year beginning July 1 through June 30).
Presentation by President of Proposed Budget for Fiscal Year 1972–73.

November 1, 1972: Dr. Esmond Long's appointment as Custodian of the Abbé Collection.
Dr. Daniel Blain's appointment as Chairman of the Bicentennial Committee.
Change in Library Hours to include evening hours Monday and Wednesday to 9 p.m. and Saturday from 9 a.m. to 5 p.m.

Other Special College Events for the Year 1972:

June 11, 1972: Cocktail party given at the College by Dr. and Mrs. George I. Blumstein in appreciation of the fine cooperation rendered by all committee members serving under the presidency of Dr. Blumstein.

September 27, 1972: Sponsored by The College of Physicians of Philadelphia; the Eastern Branch, American Society for Microbiology; and the Alliance Française de Philadelphie—a Wine-tasting Party to honor the Sesquicentennial Anniversary of the Birth of Louis Pasteur.

October 20, 1972: Reception and Banquet in Honor of Katharine R. Sturgis, M.D., First Woman President of The College of Physicians of Philadelphia.

November 16, 1972: Sponsored by the Women's Committee of the College—Lecture by Dr. Gilbert Ling, "Modern China and Acupuncture."

Sections of the College:	*Membership*
Insurance Medicine	18
Medical History	149 (14 are non-Fellows, 15 are institutions)
Ophthalmology	85
Otolaryngology	38

MEMBERSHIP

	Resident Fellows	Non-Resident Fellows	Honorary Fellows		Honorary Associate Fellows	Total
			Foreign	U.S.A.		
December 31, 1971	1,153	177	1	6	4	1,341
Died during 1972	−23	−4		−1		−28
Resigned during 1972	−5					−5
Elected during 1972	63	2				65
Transferred from Resident to Non-Resident during 1972	−14	14				
Transferred from Non-Resident to Resident during 1972						
December 31, 1972	1,174	189	1	5	4	1,373
Life Members as of December 31, 1972	44	10				
Remission of dues as of December 31, 1972	51	16				

Appointment of Executive Director:

At a special meeting of Council on August 1, 1972, F. Robert Michael, M.Sc., Adjunct Professor of Mathematics at Rutgers University and Director of RCA Institutes, Inc., was unanimously selected for the post of Executive Director of the College to replace Mr. Charles E. Ingersoll, whose resignation was accepted with regret when he was appointed President of Children's Hospital. Mr. Michael is an experienced administrator familiar with details of education, communication, and library organization, and we look forward to a long tenure of successful administration under his direction.

John L. McClenahan, M.D.
Secretary

Annual Report on the Library*

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The College Library 1972: Elliott H. Morse, *Librarian*
Library Historical Collections: W. B. McDaniel, 2d, *Curator*
Lisabeth M. Holloway, *Associate Curator*
Mid-Eastern Regional Medical Library Program: June Fulton, *Ass't. Director for Document Delivery, Reference and Bibliographic Services*
Jackie Rustigian, *Ass't. Director for Training, Consultation, Publicity, and Evaluation*
S. Weir Mitchell Associates and Fellows' Library Service: Beatrice F. Davis, *Assistant to the Librarian*
Catalog Grant: Sarah Caspari, *Head, Processing Department*
Medical Documentation Service: Alberta D. Berton, *Director*

The College Library—1972

This year's report spans the incumbency of two presidents, George I. Blumstein and Katharine R. Sturgis, and two Library Committees under the chairmanships of John Franklin Huber and Allan J Erslev. This same period witnessed the transfer of the executive directorship of the College from Charles E. Ingersoll to F. Robert Michael. Continuity of direction was provided by a sustained interest in the structure and function of the Library and in the development of new sources of financial support. During the first half of the year, then-President George I. Blumstein directed the Library Committee to a study to clarify its position and direction. He requested a reexamination of the proposals of the Berry Committee to reorganize the internal structure of the Library to bring about greater efficiency. He expressed the hope that administrative changes might release the Librarian from routine tasks to provide time for more productive activity.

Library Committee. In accordance with the President's first charge, the Library Committee reexamined the Library Committee Function statement recorded in the Annual Report on the Library, 1970, (*Transactions & Studies* 39: 51–52, July 1971). The Committee recognized its responsibility to confirm policy and to advise in its formation, but not to administer policy. Dr. Blumstein is convinced that the Library Committee should rule on policy and should provide an overview of the Library and what it should be for the guidance of the Planning and Finance Committees.

For the record, it is also noted here that subsequent Bylaws changes make the chairmanship of the Library Committee a presidential appointment rather than a Library Committee selection. The custom of annual nomination of the Librarian and the Curator of the Library Historical Collections has been discontinued.

Berry Committee recommendations. After discussion by the Library Committee, Dr. Blumstein appointed an *Ad Hoc* Committee to Review Library Organization and Library Committee Function. The Committee consists of the President, Vice President, Chairman of the Library Committee, Honorary Librarian, and Chairman of the Planning Committee, in consultation with the Librarian and the Executive Director. The charge to the *Ad Hoc* committee was based on the recommendations which Visiting (Berry) Committee made in December 1969.

* January 1–December 31, 1972.

Council action. The Berry Committee recommendations were considered by the Council of the College in April 1970 with the following action: 1., that increased financial support of the Library was highly desirable and this should be accomplished by the creation of a task force by the President; 2., that a review should be made of the activities currently performed by the Library personnel and an effort made to secure full effectiveness of the Library Committee; 3., that an Associate Librarian be appointed; 4., that salaries and any adjustments thereof should be competitive but be entirely in the hands of the Committee on Finance; 5., that services should be of a single quality to all classes of membership; 6., that the matter of the inclusion of the Medical Documentation Service as part of the general library should be referred to the Library Committee; 7., that the Librarian and the Executive Director should discuss with the Library Committee the possibility of having special services and perhaps a specific reading area for Fellows of the College; and 8., that the establishment of an Institute on the History of Medicine be considered.

Ad Hoc Committee. In preparation for the meeting of the *Ad Hoc* Committee to Review Library Organization and Library Committee Structure in January 1972, the Librarian prepared a document of seven pages and three appendices. This document offered an inventory of 28 functions performed by the Library staff and administration grouped under the following four categories: (A) Collection acquisition and processing; (B) Use of collection; (C) Training and consultation; and (D) Administration. Three organization charts showed the present structure, the structure proposed by the Berry Committee and a modification of the Berry recommendation including some functions omitted in that Committee's chart.

The document, entitled "Exploration of an Alternative Administrative Organization of the Library of the College," regrouped the 28 functions into five new sections, as follows: Document Services Section, Citation and Information Services Section, Supportive Services Section, Training and Consultation Services Section, and Paging Section serving both the Document Delivery and Supportive Services Sections.

The "Exploration ..." document was predicated upon the appointment of an Associate Librarian with secretarial assistance and upon his full involvement in the planning and implementation of the reorganization. It anticipated that he would be responsible for day-to-day management of the Library, that he would direct the activities of Library department heads, would be involved in decisions on interpretation of policy, would attend Library Committee meetings and would have a voice in policy.

The present Assistant to the Librarian would continue to supervise the work of the paging staff and to execute special professional assignments delegated by the Librarian and the Associate Librarian.

Ad Hoc Committee discussion of the "Exploration ..." document included consideration of the transfer of the duties of the Assistant to the Librarian to the new Associate Librarian. It was recognized, however, that this would not leave the new appointee with any time to accomplish the objectives envisioned by the Berry Committee. There was a difference of opinion concerning whether or not the proposed reorganization could effect economies which would reduce Library operating costs.

Conclusions. Plans for implementation of the Berry Committee recommendations were discussed in detail during the next three monthly meetings of the Library Committee. There was general agreement that the *Ad Hoc* Committee had accepted the recommendations of the Berry Committee as desirable, that the release of the Librarian's time for the preparation of grant

applications could augment Library income, that restructuring might reduce the costs of Library operation, but that even from a deficit position, the Committee was not precluded from requesting more funds if the end result would be a better organization.

The Library Committee suggested the possibility of restructuring the Library operation without the appointment of an Associate Librarian. It was recognized, however, that the addition of administrative strength is an integral part of the Berry report and that the Associate Librarian, who would be intimately involved in the successful administration of the new organization, should participate in its formation. Also, that special problems relating to the integration of reference and information services cannot be resolved on a part-time basis.

Funding requested. At its April meeting, the Library Committee agreed that budgetary provision should be made for an Associate Director and additional clerical assistance. This provision was recommended to the Finance Committee, which was unable to provide funds in the 1972/73 budget.

Financial matters. Following a College-wide deficit operation of more than $90,000 in fiscal year 1970/71, it was logical to make special efforts to reduce the loss in fiscal year 1971/72. Advance budgeting predicted a reduction in the anticipated deficit to $30,000. By year end (June 30, 1972) the anticipated deficit had been eliminated. Library-produced income totalled $96,059, well above the predicted $72,600. Library expenditures were held to $227,695, slightly below the authorized $235,244. Following a deficit year in 1970/71, the Medical Documentation Service ended 1971/72 with an operating margin of $36,916.

The turn-around is attributable to a salary freeze, reduction in work force, curtailment of book and journal purchases, and elimination of evening and Saturday hours of library opening combined on the income side with increases in charges for photoduplication and bibliographic services and an energetic effort to increase library registrations. Gratifying as the results are, it must be remembered that the effectiveness of a scientific collection is especially vulnerable to reductions of current acquisitions and that staff morale cannot long survive stringent economic pressure. Attrition was most evident in the Medical Documentation Service where survival itself was the issue. Working days were extended and jobs went home in brief cases and cartons. Deadlines were sometimes missed and tension mounted. Aggressive solicitation of new assignments raised income levels and ultimately justified some work force expansion but replacement of competent personnel in this exacting field is especially difficult.

A calendar year comparison of Library registrations shows the results of personalized appeals to institutional friends to share the costs of service to a greater degree:

	1971	1972
Commercial registrations	$26,431	$23,675
Non-profit registrations	9,899	14,072
Individual registrations	1,875	1,575
	38,205	$39,322

Recurring requests for information concerning the proportion of the College budget represented by Library-related expenditures led to the production of the following figures by the Comptroller of the College.

July 1971 to June 1972

Library	$227,695
Medical Documentation Service	117,977
Separately financed programs	
Regional grant	8,447
Regional contract	161,992
Regional training grant	514
Cataloging resource grant	5,185
Resource grant	9,202
American Philosophical grant	1,589
Total	186,929
Total Library expenditure	532,601
Total College expenditure	$763,994

These figures indicate that Library-re-

lated expenditures amount to 70 percent of total College expenditures. If 70 percent of total College employee benefits are charged to Library costs, the resulting total becomes 73 percent of total College expenditures.

On the other side of the ledger, the total of the following Library-related income figures: Library-produced income, Medical Documentation Service income, separately financed programs, library endowment income and library gifts, amounts to $586,803.

Use of the Library. The Library Committee has been observing statistics which have been showing a decline in the number of visitors to the Library since 1963. The following charts have been prepared to set this decline in longer range perspective and to show the phenomenal growth in the amount of Library materials which have been made available on loan during the same period. The two charts examined together seem to support the thesis that Library attendance has declined as library materials have been made more available to Library users where they work and study through interlibrary loan and photoduplications in lieu of actual lending of original material. The resulting decrease in travel time and increase in convenience must be a significant contribution to research and education.

Evening and Saturday Library hours. Last year's annual report on the Library gave the results of three months' study of evening and Saturday use of the reading rooms. Fiscal considerations rather than the results of the study led to the discontinuation of the extra hours of opening in September 1971. Pleas from Fellows and other Library users who were inconvenienced by the curtailment of service persuaded the Library Committee and Council to reconsider the Library hours. At the end of the year, due in large measure to the initiative of President Katharine R. Sturgis, Council endorsed the recommendation of the Library Committee to restore evening and Saturday Library hours in January 1973. The amount of off-hours use will be monitored to provide a basis for deciding whether it justifies its continuation beyond the beginning of the Summer period.

FAC Consortium. The Librarians of the Academy of Natural Sciences of Philadelphia, the Franklin Institute, and The College of Physicians have met informally for a number of years, nurturing a dream of closer cooperation among the three libraries. Objectives include coordination of acquisitions and service policies and possible grant applications for funding to explore the feasibility of a library consortium relationship. This year the administrative officers of the three institutions met with the Librarians and encouraged exploration of possible sources of grant funding. State supported workshops on library cooperation and a dawning recognition of the importance of free-standing learned society libraries suggests that the time is propitious for pursuing the dream more actively.

Following meetings with members of the Governor's Advisory Committee on Libraries and the Bureau of Library Development of the Pennsylvania State Library, a grant application was prepared and filed. The project was discussed with a prominent former librarian of a leading mid-western science library who might act as the consultant for such a feasibility study. At the end of the year the State Library announced an award of about one third of the amount requested for the feasibility study phase of the application. Meetings were planned to determine what could be done with such a modest beginning.

Stack shifting grant application. A Resource Grant application was described in last year's annual report on the library for funds to continue the shifting of journals in the stacks to provide space. This application was declined by the National Library of Medicine on the basis that this was a normal housekeeping problem that libraries should do themselves. The argument

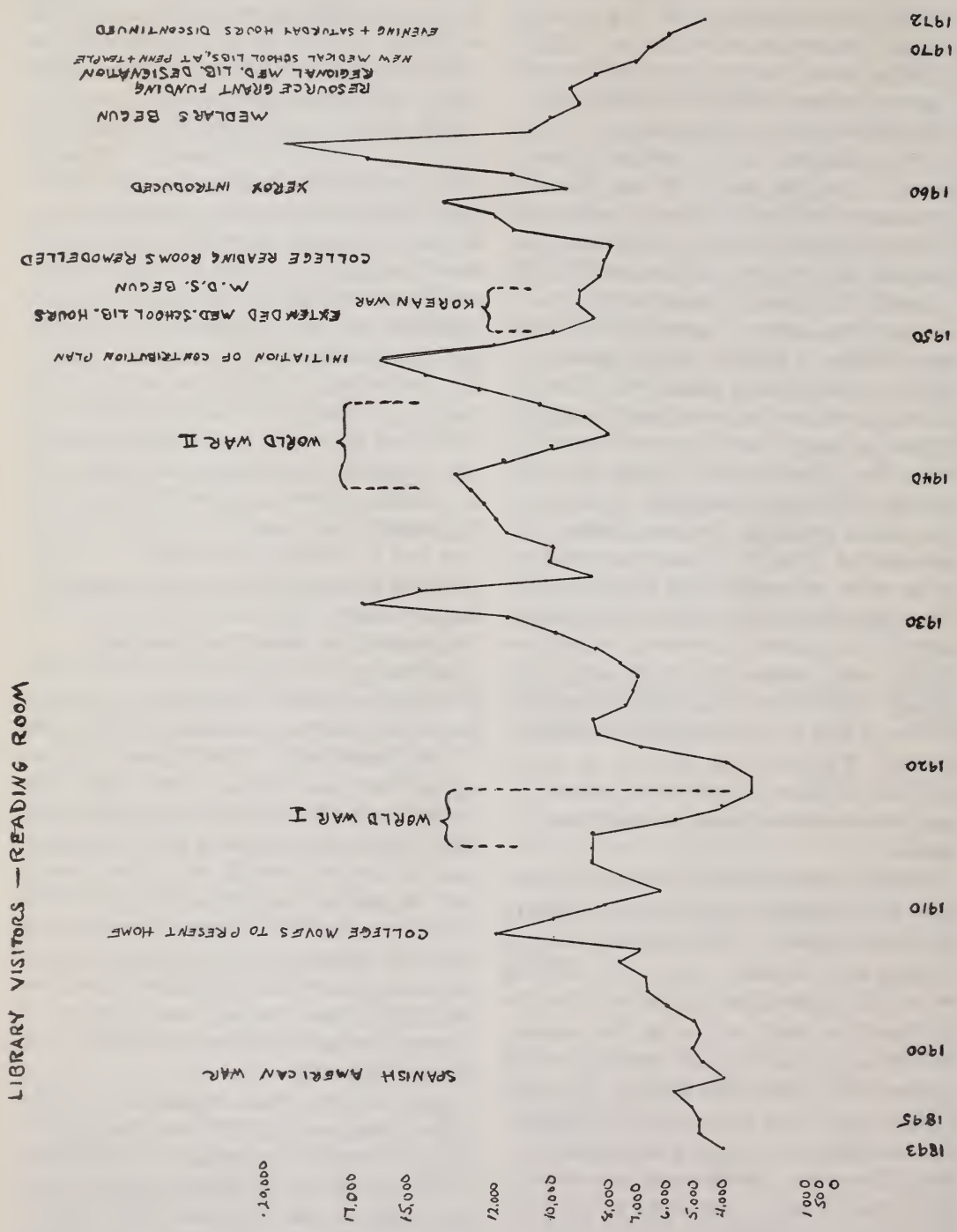
LIBRARY VISITORS — READING ROOM
20,000
17,000
15,000
12,000
10,000
8,000
7,000
6,000
5,000
4,000
1000
500
0
1843
1845
1900
1910
1920
1930
1940
1950
1960
1970
1972
SPANISH AMERICAN WAR
COLLEGE MOVES TO PRESENT HOME
WORLD WAR I
WORLD WAR II
INITIATION OF CONTRIBUTION PLAN
KOREAN WAR
EXTENDED MED.SCHOOL LIB. HOURS
M.D.S. BEGUN
COLLEGE READING ROOMS REMODELLED
XEROX INTRODUCED
MEDLARS BEGUN
RESOURCE GRANT FUNDING
REGIONAL MED. LIB. DESIGNATION
NEW MEDICAL SCHOOL LIBS. AT PENN + TEMPLE
EVENING + SATURDAY HOURS DISCONTINUED

FIG. 1.

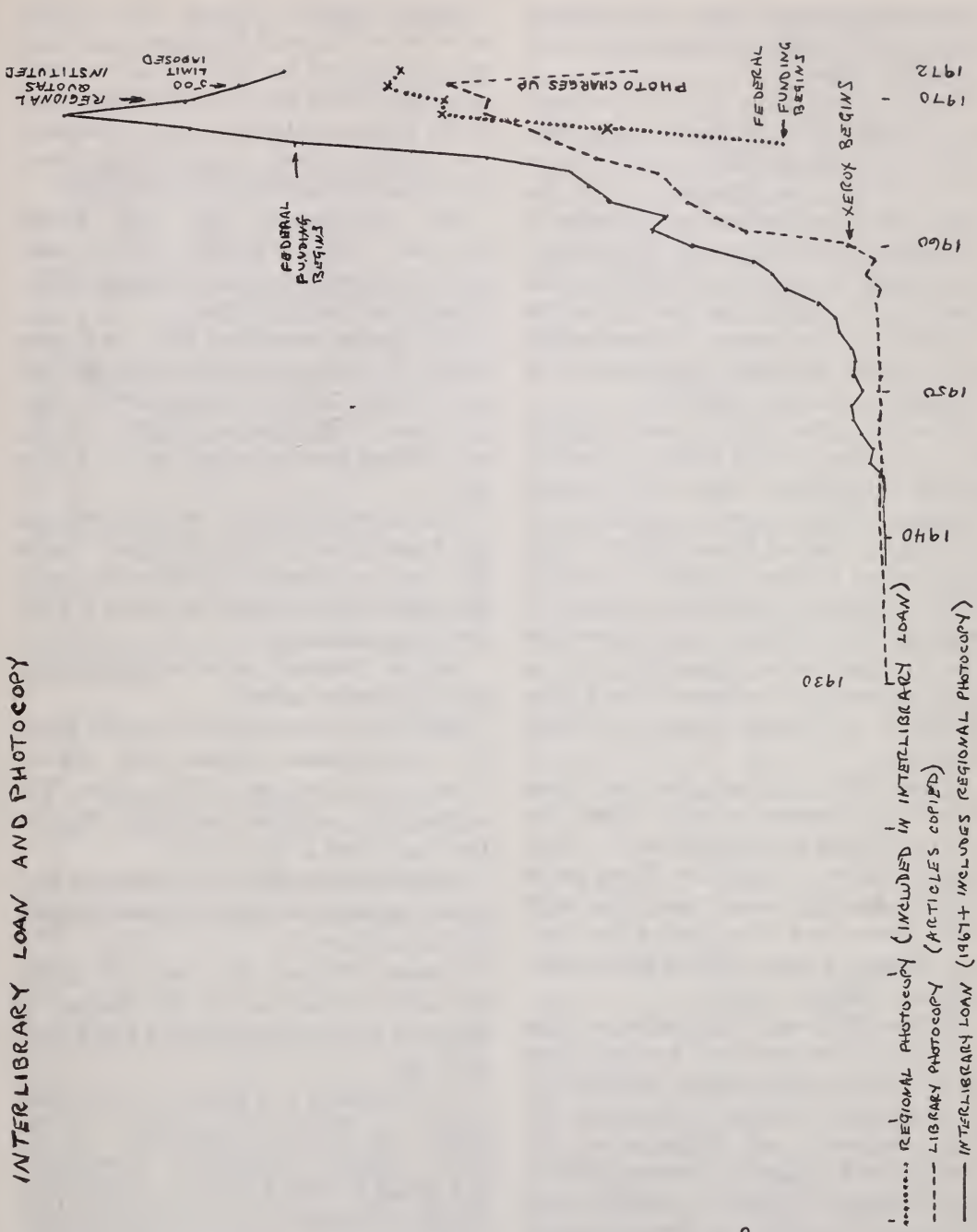
INTERLIBRARY LOAN AND PHOTOCOPY
56,000
50,000
40,000
30,000
25,000
15,000
10,000
5,000
1000
1930
1940
1950
1960
1970
1972
REGIONAL PHOTOCOPY (INCLUDED IN INTERLIBRARY LOAN)
LIBRARY PHOTOCOPY (ARTICLES COPIED)
INTERLIBRARY LOAN (1967+ INCLUDES REGIONAL PHOTOCOPY)
REGIONAL QUOTAS INSTITUTED
500 LIMIT IMPOSED
FEDERAL FUNDING BEGINS
PHOTO CHARGES UP
FEDERAL FUNDING BEGINS
XEROX BEGINS

Fig. 2.

that increasing the efficiency of this regional facility would benefit all of its users was not compelling enough.

Grant application for stack air-conditioning. An application for funds to air-condition and provide humidity control for the Library Stacks was submitted to the National Library of Medicine in September. It is estimated that the cost of this improvement would be in excess of $70,000. Regulations put into effect after the application was filed limit the amount of money which may be given for such an improvement to 75 percent of the cost or $50,000.

Personnel. The following staff members left the employ of the College: Carol C. Spencer resigned the Directorship of the Regional Medical Library Program to accept the position of Deputy Chief, Reference Services Division at the National Library of Medicine. Ruthanne Henner resigned as MEDLARS Analyst to devote her time to homemaking. Dorothy Allen resigned to enroll as a student in the Graduate School of Library Science at Drexel University.

Arlene Voll, Elizabeth Bertram, Carol Stills, Kathy Gudelunas and Barbara Cassady resigned to accept positions elsewhere. Virginia Rulon and Barbara Flynn served briefly as Readers' Service Assistants before family moves took them out of this area. Mrs. Eleanor Taylor resigned her position as Serials Assistant to travel.

Regional Medical Library administration changes to adjust for Carol Spencer's resignation were the appointments of June Fulton as Assistant Director for Document Delivery, Reference and Bibliographic Services, Jackie Rustigian as Assistant Director for Training, Consultation, Publicity, and Evaluation; and Elliott H. Morse as Acting Director.

Ellen Laskin Batty transferred from a Readers' Service Assistantship to Project Cataloger. She received her master's degree in library science this year from Drexel University.

Other transfers include Carol Sapp's move to the Regional Photocopy and Teletype Section, and the move of Andrea Jancsura and Patricia Fox from the Paging Staff to the Regional Medical Library Program. Lee Schwartz moved to the Medical Documentation Service from the Paging Staff.

New appointments were Carol Brown and Rita Thomas as Readers' Service Assistants and Janice Fisher in the Regional Photocopy and Teletype Section.

Judy Barnes transferred from the Paging Staff to the Processing Department as Project Assistant. Marilyn Wexler, Deidre Harper, Carol Clark, Maureen Mullery and Patricia Webb were appointed to the Paging Staff.

The following persons served briefly on the Paging Staff during the year: Robin Poli, Simone Schaeffer, Ladislav Nemecek. Bernadette Baus resigned to accept a Civil Service appointment.

Brigette Griesbach served as Serials Cataloger during the summer.

Additional personnel notes for the Medical Documentation Service staff will be found in that section of this report. The professional activities of Mrs. Beatrice Davis are noted in her section.

Catherine Ledwell demonstrated her dedication to public service by membership on the Grand Jury.

Lisabeth Holloway is a member of the Executive Committee of the History of Medicine Group of the Medical Library Association.

The Librarian is a member of the Committee on Library Cooperation of the Union Library Catalogue of Pennsylvania and serves as Vice President of the Union Library Catalogue. He is a member of the Commonwealth of Pennsylvania Advisory Committee on Federal Programs.

The College Library and Regional Medical Library Program were represented at the 71st Annual Meeting of the Medical Library Association in San Diego by Beatrice

Davis, Elliott H. Morse, Jackie Rustigian and Carol C. Spencer.

Elliott H. Morse
Librarian

Library Historical Collections

1. Curator's Report

The activities of this department continued to be largely invented, controlled, and brought to fruition by the Associate Curator, Lisabeth M. Holloway, and our increasingly able assistants, Jean Carr and Carolyn McAfee. Lisabeth M. Holloway's detailed report follows this brief introduction. As has also been the case in recent years, the senior Curator's time has largely been devoted to advising and revising, selecting materials for possible acquisition, and preparing historical exhibits, in addition to providing research assistance for readers and correspondents.

W. B. McDaniel, 2d
Curator

2. Report of the Associate Curator and Cataloguer of Historical Materials

The principal activity of the Historical Department, during the spring and fall of 1972, consisted in moving the rare, pre-1800 collections from the 7th floor to the 6th floor of the new stack. At the same time, the less valuable materials on the 6th floor were taken to the space newly freed above. Careful attention was given to safety and avoidance of damage to these fragile materials during this complicated operation, which enlisted the services of the Historical staff and of Richard Mascitti, for whose carefulness and good nature we are very grateful.

The purpose, of course, has been to get the most valuable materials into the somewhat better climate of the 6th floor. We have been able to rearrange them, clean them, and *count* them—we now know that the pre-1800 printed books and journals number about 10,000. (Manuscripts of book and article length total about 1,000; shorter pieces, letters and documents, perhaps 10,000; prints and photographs about the same number; pamphlets and theses of pre-1800 date are so far uncounted, but 15,000 would be a conservative guess.)

The Library's Historical Collections have been named the National Repository for the American Academy of Dermatology, whose Historian, Lawrence C. Parish, M.D., Fellow of this College, has been instrumental in encouraging donations of books, manuscripts, and biographical materials from members of the Academy. Donors during 1972 included: Herman Beerman, M.D., of Philadelphia; Mrs. Charles C. Dennie, Shawnee Mission, Kansas; Dome Laboratories, West Haven, Conn.; Mrs. Frank J. Eichenlaub, Washington, D.C.; Mrs. Thomas Gibson, Loomis, California; Roy L. Kile, M.D., Cincinnati; Mrs. C. Ferd Lehmann, San Antonio, Texas; the National Psoriasis Foundation, Portland, Oregon; the Neutrogena Corporation, Los Angeles; Owen Laboratories, Dallas; F. Ronchese, M.D., Providence; Mrs. Herbert Ronsenfeld, Jamaica, N.Y.; the Schering Corporation, Kenilworth, N.J.; Arthur G. Schoch, M.D., Dallas; Richard L. Sutton, Jr., M.D., Kansas City, Missouri; and Syntex Laboratories, Palo Alto, California.

In a similar connection, it gives us great pleasure to announce a grant of $5,000 from the Herman and Ruth Goodman Foundation of New York, in honor of the late Herman Goodman, a noted dermatologist and historian, which will be used in the survey and recataloguing of our extensive collections on dermatology. This work has been begun by Frances Wright. During the summer, Susan Ashby, a student at Bryn Mawr College, spent eleven weeks with us on a Federal Work-Study grant, dividing her time between a historical bibliography of dermatology and the calendaring of a volume of one of our century-old scrapbooks.

Recataloguing and consolidation of the manuscript collections, under the careful oversight of Dr. McDaniel, continues to be the Associate Curator's prime activity. This is time-consuming and absorbing work; many interesting discoveries and re-discoveries continue to be made.

A total of 303 non-manuscript items were catalogued during the year, and 14,209 cards filed, of which 9,115 were for the Portrait Catalogue.

We should like to report with pleasure the appearance of a number of works based on materials in the Historical Collections, especially *Jaeger's Atlas of Diseases of the Ocular Fundus*, by Daniel M. Albert, M.D. (Philadelphia, Saunders, 1972), which reproduces in color the majority of Eduard Jaeger's original paintings, bequeathed to this College by William Fisher Norris, 1839–1901. The series "Medicine and Society in America," edited by Charles E. Rosenberg, Ph.D., and published by the Arno Press, reproduced 14 titles from originals in the possession of this College.

The Historical Collections are indebted to the following institutions for the gift of materials within our interest: the University of Pennsylvania Archives, the American Philosophical Society, and the Friends' Hospital of Philadelphia. Among individual donors, the following have contributed manuscript items of interest and importance: Mrs. Edward Harvey, Katharine R. Sturgis, M.D. and John L. McClenahan, M.D. Printed materials, some of considerable rarity, were presented by the following friends and Fellows: Oscar V. Batson, M.D., Ernest H. Coleman, M.D., George W. Corner, M.D., George A. Davis, Donald C. Geist, M.D., Wm. Shainline Middleton, M.D., Fred B. Rogers, M.D., Charles E. Rosenberg, Ph.D., Francis C. Wood, M.D., and Dr. and Mrs. H. Curtis Wood, Jr.

Lisabeth M. Holloway
Associate Curator and Cataloguer, Historical Materials

Mid-Eastern Regional Medical Library Program

July 1971–June 1972

Document Delivery

Document delivery volume for requests filled decreased to 38,101 for FY72 from 41,649 for FY71. The decrease was directly attributable to the placement of a maximum limit of 500 quota stamps on institutions in July 1971. This was done to encourage local sharing of resources.

The percentage of requests accepted to those received was 97.7, and, of these, 82.8% were filled. Filled requests processed either on the day of receipt or on the following day were 94.7%. Unfilled requests totaled 17.2%, and, of these, 75.4% were referred to other libraries. The remaining 24.6% of nonfilled requests were returned to the requester with another location usually indicated. The clearing of nonfilled requests either on the day of receipt or on the following day improved to 74.6% in FY72 from 66% in FY71.

District Center libraries of the Pennsylvania Public Library System were provided with Regional quota stamps. This provision was made so that unaffiliated requesters and requesters ineligible for a quota could have their requests for biomedical material referred to MERML by these public libraries.

Reference and Bibliographic Services

Quick reference questions (those answered at the Circulation Desk) dropped to 7,613 in FY72 from 10,973 in FY71. A change in reporting procedures was a contributing factor. Reference searches numbered 2,870 in FY72, an increase from the 2,366 total in FY71. Manually compiled bibliographies also showed an increase in FY72 as many manual searches were performed as follow-ups to MEDLINE searches. It was the beginning of this MEDLINE service which drew most attention.

MEDLINE facilities became operational not only at The College of Physicians, but, also, at Hershey Medical Center, the University of Pittsburgh, and the Veterans Administration Hospital in Erie. Four medical school libraries were in the process of becoming MEDLINE centers. Temple University, Hahnemann Medical College, and the University of Pennsylvania School of Medicine scheduled trainees for classes to be held at the National Library of Medicine. Temple University and Jefferson University signed agreements with NLM.

All reference librarians at MERML have been trained in the use of MEDLINE. The chief reference librarian received three weeks of training at NLM in November. The MEDLARS analyst conducted a 40-hour training course for the other two reference librarians. Eight MEDLINE user orientations and demonstrations were given by the staff, reaching 154 potential users.

Requesters were asked to return appraisals on the 334 MEDLINE searches processed at MERML. The returned 100 appraisals supplied the following data: 93% of the requesters found the search output of value; estimated recall was 75–100% in 66.3% of the cases; 44% of the requesters had an interview with the search analyst, and, of these, 88% found the interview helpful.

The search request form filled out by the requester provided information on the types of institutions served by the MEDLINE terminal based at The College of Physicians:

	% of total
hospitals	31
health science schools	27
government	15
other academic	12
commercial	12
unaffiliated	3
	100

	Actual	Expected*
Metropolitan Philadelphia	54%	53%
Western Pennsylvania	4	21
Central Pennsylvania	14	7
Eastern Pennsylvania	8	7
New Jersey	13	9
Delaware	6	3
	99	100

* "Expected" use is based on the geographical distribution of health science personnel within the region.

The cost of question negotiation, formulation, and searching time per MEDLINE search (direct wages only excluding indirect costs, secretarial time, fringes, NLM-paid line charges and machine costs) averaged $10.04 for the period January–May. The cost differential was high among the four searchers. If the MEDLARS analyst is excluded, the January–May average for the other three searchers was $27.25 per search. After six months of experience, the average for the same three searchers had decreased in July to $6.05 per search. The average for all four searchers in July was $3.99.

Random Alarm Mechanisms (work sampling devices) were used to derive preliminary results on cost determinations for reference service as a whole:

Type reference question	% of manual output units	Average cost/ question, direct wages only, 3 searchers averaged
Location of documents not in library	9	$1.54
Directory information	18	2.21
Citation verification	28	2.99
Specific data	42	5.00
Literature search	3	34.56

Unfortunately, despite continual promotional efforts, only 12% of the manual reference questions came from Delaware, New Jersey, western, central, or eastern Pennsylvania. Metropolitan Philadelphia accounted for 85% of the questions.

Training and Consultation

Training

The second year of the training and consultation program has continued to develop in answer to the needs of the health science community in Region III. The hospital library consultant has had the opportunity to analyze the state of the smaller health science libraries through the results of a 1970 survey and through further findings in 1971.

The need for basic instruction in library practice among hospital libraries has fostered the development of MERML's library training programs. These programs are designed as one-day workshops which concentrate in-depth on a specific library topic. The level of instruction is mainly geared to the non-professional or novice librarian, although all health science librarians in Region III are welcome. Many professional librarians attend the workshops as "refreshers" and also to maintain an association with other hospital librarians, especially those in smaller hospitals where turnover in library personnel is high.

The workshops are usually given in the fall and spring in Philadelphia and in several outlying areas in eastern and central Pennsylvania, Delaware, and southern New Jersey. Audience size usually varies from 10 to 30, depending on the topic and on the need to limit group size. Participants do participate in the programs, either by engaging in practical exercises or in discussions, according to the nature of the workshop.

Of wide appeal is MERML's regional approach to training programs. The regional workshop, conducted at a major hospital in the field, is often tailored to the area's needs. Moreover, it fosters neighborliness among the hospital librarians, while allowing the hosting hospital library to merge as a leader among this group.

The fall 1971 workshop series, entitled "Organization of Library Materials" covered the following topics: Selection and Ordering; Cataloging and Classification (National Library of Medicine and Library of Congress systems); and Periodicals Maintenance. Programs were held at the following community hospitals:

Date (1971)	Location	Attendees
Oct. 14	Monmouth Medical Center Long Branch, New Jersey	12
Oct. 19	College of Physicians of Philadelphia	18
Oct. 21	Atlantic City Hospital Atlantic City, New Jersey	13
Oct. 26	Geisinger Medical Center Danville, Pennsylvania	9
Oct. 28	Community Medical Center Scranton, Pennsylvania	7
Nov. 4	Lancaster General Hospital Lancaster, Pennsylvania	13
Nov. 9	Allentown Hospital Association Allentown, Pennsylvania	12
Nov. 16	College of Physicians of Philadelphia	14
		98*

* 98 individuals representing 75 institutions

This workshop was repeated on May 17, 1972 at the Veterans Administration Hospital, Wilkes-Barre, Pa. and 8 persons attended.

The Spring 1972 workshop series on "Hospital Library Management and Administration" discussed two main topics: Planning and Organizing the Library within the Hospital System; Administration of the Hospital Library. The following workshops were held:

Date (1972)	Locat on	Attendees
May 2	Wilmington Medical Center Wilmington, Delaware	9
May 4	Veterans Administration Hospital Lebanon, Pennsylvania	16
May 8	College of Physicians of Philadelphia	25
May 16	Veterans Administration Hospital Wilkes-Barre, Pennsylvania	10
May 25	Monmouth County Library Shrewbury, New Jersey	8
May 31	The College of Physicians of Philadelphia	23
		91*

* 91 individuals representing 69 institutions

Occasionally groups will hold a meeting

to which the consultant is invited to explain MERML services. Such meetings were held with the following organizations:

March 30 New Jersey Hospital Librarians' Association (Sponsored by New Jersey Regional Program at Princeton, New Jersey)

May 15 Wilkes-Barre/Scranton Academic and Public Librarians (at Veterans Administration Hospital, Wilkes-Barre, Pennsylvania)

Consultation

Since basic instruction has been provided through the library workshops, the consultation service has taken on a new image. Advisory services by telephone and letter have proven to be viable means of communication for situations in which a visit to the requesting institution is not necessary. 101 telephone and 86 mail advisory transactions have been handled this fiscal year. Topics in question are usually about: MERML Services; library collections; product or equipment information; federal grant information.

Requests come from all types and sizes of health-related libraries. Often librarians who have attended a workshop, will need follow-up advice on their particular library problems. Inquiries are also made by physicians, administrators, or other parties interested in starting or improving a hospital library program. Those institutions with fairly advanced library service often seek guidance in filing federal grant proposals for library projects.

Consultation visits fall into two categories: brief consultation (1–2 hours); in-depth consultation (½ day or more, usually followed by a written report). Of the 6 brief consultations rendered this fiscal year the following types of institutions were served:

1 medical school affiliate
1 osteopathic hospital
1 general community hospital
1 general community hospital school of nursing
1 private drug and alcohol rehabilitation center
1 medical publisher

General library services and practices were discussed with the first four institutions above; library collection and physical layout with the rehabilitation center; indexing of report literature with the medical publisher. (This consultation was at the College of Physicians.)

In-depth consultations followed by reports were made with three institutions (on four occasions) on such topics as: general library services and practices; physical layout; indexing of report literature; multimedia resources.

In all cases consultations were made at the requests of the institutions. Moreover, almost all of these institutions have been represented at library workshops during this year and last.

The approach to library development in health science institutions has been two-sided. Where general *instruction* is needed, the workshop is the means of communication; where specific *advice* is called for, consultation (telephone, mail, in-person) is the way. It has been MERML's aim to coordinate these two services so that our achievements can be well utilized and widely shared by the health science library clientele in our Region.

Publications

MERML Fact Sheet. A three-page flyer on the MERML program was issued and circulated to our clientele by direct mail, at workshops, and during consultations. The fact sheet answers "What is MERML?" and "Who May Use MERML Services?" and explains Interlibrary Loan and Photocopy Services, Reference and Bibliographic Services, MEDLARS Searching Services, and Training and Consultation.

MERML News. The August 1971 issue featured the National Library of Medicine's (NLM) catalog card service offered through the library supply house, Bro-Dart, Inc.

(This service has been discontinued as of August 1, 1972.) The NLM Literature Searches produced by MEDLARS were listed for 1970 and 1971.

The January 1972 issue explained the new MERML Subject Search Request Form to be used for all subject searches, whether manual or machine. A copy of the form was included in the newsletter.

The April 1972 issue explained in depth MEDLINE (*MED*LARS on-*Line*), the on-line bibliographic searching service connected to the NLM computer. Pertinent library meetings and workshops, both national and regional, were announced.

The newsletter, usually including 9 pages of text, is sent to a Regional clientele of about 700 and to another 200 interested groups or individuals.

S. Weir Mitchell Associates

S. Weir Mitchell Associates increased by five endowments. A recruiting dinner in June resulted in three subscriptions plus expressions of interest from four others. Altogether there are 170 titles endowed.

Visitors. Overseas visitors came from Japan, Hungary, Belgium and England, and were given tours of the library. Ten groups from area high schools and nursing schools also were given tours of the library.

Fellows' Service. Fellows' use of the special attention of the Fellows' Librarian increased considerably as the following tabulation shows:

Bibliographic searches	33
Citation verification & identification	6
Quick reference	15
Misc. inquiries	12
Direct loans to Fellows by mail	3
Referrals to MEDLARS/MEDLINE	5
Books specially ordered for Fellows	7

Photocopy use remained fairly constant, some 287 stamps being redeemed by Fellows, or about $875.00 worth of photocopy.

Fellows' normal use of the reading room is not recorded here, only the special requests, mainly by phone or mail for immediate attention. Fellows generally only turn to the Fellows' Librarian to expedite their requests when the normal channels for one reason or another do not suffice.

The *Resource Grant* proposal for funds to continue to shift the collection in the stacks was not funded, and the stack shift consequently came to an almost complete halt except for the shifting of the rare books from the seventh to the sixth floor. After the floods of June, and the needs for replacement of library stock became known, the duplicate collection was put at the disposal of the medical libraries in the Wilkes-Barre area. While no shipments have left the library yet, several boxes of journals have been selected, packed, and ear-marked for libraries in the Wilkes-Barre area. About twenty cartons of duplicate foreign material was deposited with United States Book Exchange, Washington to our account. The influx of gift duplicates has been drastically lessened because of the cutback in some of the private pharmaceutical libraries in the region. Nevertheless, ten individuals browsed the duplicate collection for their personal or institutional libraries, and eight institutional requests for missing issues were filled. Two shipments were made to used periodical dealers.

Mrs. Davis served as Chairman of the Curriculum Committee for the Medical Library Association, and in that capacity visited the library schools at the Universities of Kentucky and Maryland, and Rosary College in River Forest, Illinois. As member of the *Ad Hoc* Committee to prepare a grant proposal to fund the activities of the office of the Director of Medical Library Education of the Medical Library Association, she participated in a planning session in Boston and a drafting session in Philadelphia. Recent word has it that the proposal has been approved and funding is expected. Mrs. Davis served as College representative on the National Library of Medicine Committee to develop a locator list for 5,000 most-used titles in the United States.

College holdings and those of ten libraries in the Mid-Eastern Region were coded to show locations, and forwarded to NLM for processing. In March, Mrs. Davis attended a meeting of this committee in Bethesda at NLM.

The Paging staff accomplished the pam-binding 989 volumes in addition to their primary responsibility for paging and shelving. Their prompt, fast, and pleasant service to readers is an important factor in the library's reputation for excellent service. Since the best public relations program is fast, efficient, and friendly service, the role the paging staff plays in creating this service reputation cannot be over-emphasized.

Considering the unusually heavy turnover in paging staff this year, their performance is cause for gratification. Fourteen non-professional staff members—pages, Xerox operator, desk assistants—have been recruited and trained over the year. This is about twice the usual turnover, the result of a number of resignations for reasons unforseen and unexpected. In addition, a student from the Philadelphia Community College's library technician program worked one day a week rotating through the various departments for one semester as part of her curriculum.

Beatrice F. Davis
Assistant to the Librarian

Cataloging Grant

In January 1972, a two-year project grant of $52,244 was awarded to the College by the National Institutes of Health for the purpose of dividing the Library's card catalog into an Historical-Biographical unit and into a contemporary unit, containing material published in 1950 and after.

Application had been made for the grant because the catalog was becoming increasingly difficult to use. The large number of catalog cards, which represent many centuries of works, led to complicated filing and a confusing variety of subject headings. It was thought that a division at 1950, combined with a revision of subject headings according to MeSH, would alleviate both problems. Because of the strength of the historical collection, it is desirable to keep the secondary historical and biographical source materials, regardless of publication date, with the pre-1950 primary source materials. The result will be the creation of two tools, which should be easier for patrons to use regardless of their interest—contemporary or historical.

The project is planned in two stages. First, cards for books of a 1950 publication date and later are being removed to a new catalog unit. When this separation is complete, the subject cards in the new 1950 catalog will be revised according to MeSH. This revision should enable the library to update its subject catalog annually, so that the difficulty of maintaining both old and new subject headings, with the corresponding necessity of making appropriate cross-referrals will be eliminated. It is estimated that the project will require two years for completion.

Ellen Batty and Judy Barnes have been working under the direction of Sarah Caspari on the catalog grant project since April 1972. A new catalog unit has been purchased and two more are on order to alleviate drawer congestion and to accommodate a certain amount of card duplication, which is a natural outcome of the project. Work has proceeded with a minimum of complications and by the end of the year division was under way in the R section of the catalog.

Despite our efforts to orient users to shifting locations by signs and a blackboard which gives notice of drawer by drawer progress, it has sometimes been difficult for even the most aware staff members to keep up with the constant changes. Until division is complete, this confusion will undoubtedly continue. However, we hope that the ease of catalog use upon completion of the project will be sufficient recompense for

the inconvenience caused while the project is proceeding.

Sarah Caspari
Head of the Processing Department

Benefactors

The library acknowledges its gratitude to the following institutions which have shared the operational costs of the College Library this year:

NON PROFIT ORGANIZATIONS

Atlantic City Hospital
Biological Abstracts
Bryn Mawr Hospital
Chestnut Hill Hospital Medical Staff
Children's Hospital
Cooper Hospital (Medical Staff)
Alfred I. du Pont Institute of The Nemours Foundation
Eagleville Hospital & Rehabilitation Center
Albert Einstein Medical Center, N.D. (Korman)
Albert Einstein Medical Center (Medical Staff) N.D.
Franklin Institute
Germantown Dispensary & Hospital
Hahnemann Medical College
Harrisburg Hospital
Hospital of the University of Pennsylvania
Institute for Cancer Research
Institute for Medical Research
Lankenau Hospital
Medical College of Pennsylvania
Mercer Hospital
Moss Rehabilitation Hospital
Parkview Hospital
Pennsylvania College of Podiatric Medicine
Pennsylvania Hospital
Philadelphia College of Osteopathic Medicine
Philadelphia General Hospital
Sacred Heart Hospital
St. Luke's Hospital
Temple University Medical School
Thomas Jefferson University
University of Pennsylvania
Walson Army Hospital
West Jersey Hospital
Wistar Institute Library

CORPORATE ORGANIZATIONS

Affiliated Medical Research, Inc.
Air Shields, Inc.
Armbruster, Moore & Mackerell
N. W. Ayer & Son, Inc.
Beasley, James E. (Atty)
Bell Telephone Company
Bernstein, Bernstein, Harris & Kessler (atty)
Biomedical Laboratories
Bleakly, Stockwell, Zink & McGreary
Bristol Laboratories
Brown, Connery, Kulp, Purnell & Greene
Campbell Institute for Food Research
Cappell Laboratories, Inc.
Carter-Wallace Laboratories
Chrono-Log Corporation
Ciba-Geigy Corporation
Cohen, Shapiro, Polisher, Shiekman & Cohen
Colgate-Palmolive Company
Cooper Laboratories
Corning Glass Works
Council for Tobacco Research
F. A. Davis Company
Dechert, Price and Rhoads
The Dow Chemical Company
Duane, Morris and Heckscher
E. I. du Pont de Nemours Co. (Haskell)
E. I. du Pont de Nemours Co. (Lavoisier)
E. I. du Pont de Nemours Co. (Stine)
E. I. du Pont de Nemours Co. (Technical Lib.)
Ettinger, Poserina, Silverman, Dubin, Anapol and Sagot
Extracorporeal Medical Specialties, Inc.
FMC Corporation (American Viscose Co.)
Feldman and Feldman (Atty)
Frank and Margolis (Atty)
Freedman, Borowsky and Lorry (Atty)
General Electric Company
General Technical Services, Inc.
Goldstein, Evelyn
Goushian, Mooradian, Goldsmith & Keller
Gross, Sklar & Lorry, (Atty)
Harleco
Hershey Food Corporation
Hoechst Pharmaceutical Company
Hoffman-LaRoche, Inc.
Hoffman-LaRoche Inc. (Roche Medical Electronics Div)
ICI America, Inc.
Information Interscience, Inc.
Institute for Scientific Information
International Flavors & Fragrances, Inc.
International Pharmaceutical Corporation
Johnson & Johnson Research Center
Kilpatrick Associates, Inc.
Kisselman, Deighan, Montano, King & Summers
Klovsky, Kuby & Harris
Kolsby & Wolf (Atty)
Kremer, Krimsky & Luterman (Atty)
Krusen, Evans & Byrne
La Brum and Doak
La Wall & Harrisson Research Labs. Inc.
Lea, Inc.
Lea and Febiger

Lederle Laboratories (American Cyanamid Co.)
Lewis & Gilman, Inc.
J. B. Lippincott Company
Arthur D. Little, Inc.
Litvin, S. Gerald (Atty)
Mac Andrews & Forbes Company
Manchel, Lundy, Lessin, Finkel & Rabelow
Mann & Ungar (Atty)
McNeil Laboratories, Inc.
Mead Johnson Research Center
Merck Frosst Laboratories
Merck Sharp & Dohme
Merrell-National Laboratories
Monheit, Herbert (Atty)
Morgan, Lewis & Bockius
Norwich Pharmacal Company
Obermayer, Rebmann, Maxwell & Hippel (Atty)
OEM Medical Inc.
Ortho Research Foundation
Pechner, Sacks, Cantor and Dorfman
Pennwalt Corporation
Pepper, Hamilton and Scheetz (Atty)
Perskie and Callinan (Atty)
Pitman-Moore, Inc.
Proctor and Gamble Company
Quaker Chemical Corporation
RCA/GCS Library
Raynes and McCarty
R. J. Reynolds Tobacco Company
Richter, Syken, Ross, Binder & O'Neill
Rodale Press, Inc.
Rohm and Haas Company
William H. Rorer, Inc.
Sandoz-Wander, Inc.
W. B. Saunders Company
Schnader, Harrison, Segal & Lewis
Schering Corporation
Scott Paper Company
Shein, Mele & Brookman (Atty)
Shuster, Morris M. (Atty)
Smith, Aker, Grossman & Hollinger
Smith, Kline and French Laboratories
Squibb Institute for Medical Research
Stone, Paula
Stradley, Ronon, Stevens & Young (Atty)
Ted Thomas Associates, Inc.
Travenol Laboratories, Inc.
USV Pharmaceutical Corporation
Warner-Lambert Pharmaceutical Co.
White & Williams (Atty)
Norman Willis Productions
Worthington Biochemical Corporation
Wyeth Laboratories, Inc.
Zenith Laboratories, Inc.

Statistical Summary

	1972	*1971*
Accessioned items:[1]		
Incunabula[2]	421	421
Manuscripts and typescripts	1353	1352
General	262720	259451
Pamphlets	10991	10845
	275485[3]	272069[3]
Unaccessioned items:[1]		
Reports	28822	28822
Theses	64494	63910
Pamphlets, reprints and microfiche	228918	228721
	322234	321453

[1] Accessioned items in this library comprise the total number of bound volumes and such unbound pamphlets as have been cataloged as separate bibliographical units regardless of their size.

There remain many thousands of unaccessioned pamphlets awaiting accessioning and cataloging. A true quantitative and qualitative picture of the library's holdings cannot be presented until this wealth of neglected material has been processed and duly registered in our 'accessioned' count.

[2] The Library owns 423 incunabula, but there are two instances of two bound together, reducing the number of accessioned volumes.

[3] Included in these figures are the following collections which are on permanent deposit in the Library: Gross Library, 3,976 accessioned items; Parry Library of the Obstetrical Society of Philadelphia, 217; Mütter Museum, 200. Mütter Museum books may not be removed from the College building.

Accessioned acquisitions:

1972: 3416 (1880 by purchase; 1271 by gift; 265 by exchange)
(books, 1393; periodical volumes, 1877; pamphlets, 146)
1971: 5682 (3412 by purchase; 1897 by gift; 373 by exchange)
(books, 2093; periodical volumes, 3057, pamphlets, 532)

Unaccessioned acquisitions:

1972: 781 items (theses, 584; microfiche, 34, miscellaneous, 163)
1971: 557 items (theses, 540; miscellaneous, 17)

Currently Received Serials

	Subscription	Gift	Exchange	Total
U.S.A.	632	386	46	1064
Western Europe	974	67	129	1170
Eastern Europe	146	36	65	247
United Kingdom & Eire	191	26	29	246
Asia (including Japan)	121	61	79	261
Latin America & West Indies	33	52	68	153
Canada	20	17	8	45
Pacific (Australasia)	12	7	8	27
Africa	3	8	13	24
Grand Total 1972 (Dec. 31)	2132	660	445	3237[4]
Grand Total 1971 (Dec. 31)	1977	649	455	3081

New Titles: A total of 62 new serial titles was added from November 1, 1971 to December 31, 1972. (56: 1971) 23,829 separate issues were received, checked in and shelved. (23,637: 1971).

Binding: During 1972, 624 volumes were commercially bound. (1971: 1065)
801 volumes were pamphlet bound in the library. (1971: 746)

Readers' Use of the Library

Library hours: During the year the Library was open from 9:00 A.M. to 5:00 P.M. Monday through Friday. There were no evening or weekend hours. The following legal holidays were observed: Thanksgiving, Christmas, New Year's, Washington's Birthday, Memorial, Independence, and Labor Days.

		Reading Room	*Periodicals Room*	*Totals*
Visitors				
	1972	4,952	1,412	6,364
	1971	6,062	2,325	8,387
		Intra-mural[5]	*Extra-mural*	*Totals*
Circulation				
	1972	18,947	11,080	30,027
	1971	21,936	17,570	39,506
		Books	*Journals*	*Totals*
	1972	7,975	22,052	30,027
	1971	9,754	29,752	39,506

Interlibrary loans: The Library filled 41,255 (1971: 44,365) interlibrary loan requests. The 1972 figures include 33,619 (1971: 34,272) articles photocopied with Regional Grant support but they do not include the photoduplications noted immediately below.

[4] Titles are only included in this count if issues were received during 1971 or 1972.

[5] The number of volumes "consulted in the library" includes only those supplied on demand. Readers have access to the bound volumes of periodicals and reference works kept on the shelves in the Reading Room. The Fellows, and occasionally others, by special permission, have access to the book stacks. There are, therefore, many volumes consulted of which no accurate record can be kept.

Photoduplication: The Library photocopied on request 17,395 articles. Users of this service reimburse the College Library for copying and bookkeeping costs.

Donations

The donors for the past year number 62 (1971 : 65) The library is indebted for large gifts of books, pamphlets and unbound periodicals to the following donors: Paul E. Steiner, M.D.; Sarah Bishop, M.D.; Mrs. S. G. Shepherd; University of Pennsylvania School of Medicine; Temple University; Lankenau Hospital; The Medical College of Pennsylvania Hospital; Hahnemann Medical College Library; American College of Physicians; Philadelphia College of Pharmacy and Science; Jefferson University Medical Library; Smith, Kline & French Laboratories, and Merck, Sharp & Dohme.

Various publishing houses, among the group of corporate donors, have presented volumes, as follows: F. A. Davis Company, 31; Lea & Febiger, 26; J. B. Lippincott, Co., 35; W. B. Saunders Co., 99.

Other individual donors were as follows: Mr. William H. Ashton, Mr. John C. Ball, Drs. William Blakemore, Russell Boles, L. Thompson Bowles, Mrs. Elizabeth Brady, Dr. Thomas Butterworth, The Press of Case Western Reserve University, Drs. John K. Clark, J. Wallace Cleland, Miss Margaret Foti, Professor Otto Geiger, Dr. Robert W. Goltz, Miss Marjorie Greenfield, Drs. Robert H. Ivy, Richard M. Lehman, Esmond R. Long, Stuart Mudd, Donald M. Pillsbury, Richard H. Roberts, Mrs. Jane Rupp, Hakim Mohammed Said, Mr. Nick S. Semenuk, Drs. Julian A. Sterling, Katharine R. Sturgis, F. William Sunderman, Mrs. Walter Sussman, Drs. George K. Tokuhata, S. B. Ullman, Mrs. Alfred Wielapolska, Drs. J. D. Wentzler, Irving J. Wolman and Myron Yanoff.

Theses and dissertations in the number of 613 have been received on exchange from the following European schools of medicine: Universities of Bern, Copenhagen, Erlangen, Geneva, Karolinska Institut Lausanne, Leiden, Liege, Louvain, Lund, Uppsala and Utrecht.

The *Transactions & Studies* was sent, either in exchange or as gift, to 440 organizations. (1971 : 445)

Medical Documentation Service

Publishing Activity. The Drug Information Association Journal has become an integral part of the MDS photocomposition service. With an in-house photocomposition service, in the form of an MTSC system (magnetic tape selectric composer system), direct control in preparing camera-ready copy provides the department and its clients with a service relatively difficult to obtain elsewhere.

The publication of *Cystic Fibrosis* (an abstract journal) continues under the auspices of the Cystic Fibrosis Research Foundation, with the Medical Documentation Service providing article selection, abstracting and photocomposition.

Negotiations are under way to add another abstracting journal with a focus of interest in information science to the Medical Documentation Service's publishing effort.

Copies of the *Proceedings of the 6th Annual National Information Retrieval Colloquium,* edited by Louise Schultz (BIOSIS) and the *Proceedings of the 7th Annual National Information Retrieval Colloquim,* edited by Alberta D. Berton (M.D.S.) and published by the Medical Documentation Service, are available at a cost of $13.50 and $15.00 respectively. Preparation of the abstracts of papers to be presented in Montreal at the 1973 Annual Conference of the Drug Information Association are in process and will be published by M.D.S. in July 1973.

An effort to obtain funding for the continuation of *Influenza: An Annotated Bibliography,* upon withdrawal of support from N.I.H., resulted in a favorable response from previous recipients of free subscriptions, but paid subscription orders were insufficient to underwrite costs of publication. The publication has been temporarily suspended pending a possible alteration in this picture.

SDI Service. The Selective Dissemination of Information Service continues to be a major function of M.D.S., serving a strongly pharmaceutical-oriented interest as well as a concern for environmental health and drug abuse. A second phase programming from the computerized process now in use is being developed to meet greater demand

and to create a flexibility for retrieval of the rather extensive data base which has resulted from the activity.

Growth of our own document delivery service coinciding with the SDI service created a need to provide a copying service under the control of the department itself. Mr. Lee Schwartz joined the M.D.S. staff late in the year as coordinator of our reference and document delivery service.

As a result of the Director's presentation to the Pharmaceutical Manufacturers' Association in the spring of the year, additional interest developed nationwide for the use of our SDI Service, with its unique customized method of servicing client needs. Storage and retrieval of this data base has made availability of the data useful to a wide spectrum of clients with multidisciplinary biomedical interests.

Literature Review. Food and Drug Administration investigation of component parts of pharmaceuticals both ethical and OTC continued to provide M.D.S. with contracts requiring extensive literature surveys and summarizations of findings. Environmental health interests, ecological and other health hazard studies nationwide have tapped our resources in a similar manner, and have expanded interests requiring a conglomerate of M.D.S. services.

Abstracting Services. M.D.S. closed the first year of an ongoing contract with BIOSIS, having provided almost 8000 foreign language abstracts for inclusion in its publication *Biological Abstracts* as well as *HEEP*. The contract has been renewed for the coming year.

In addition to the abstracts created for our own publication, M.D.S. clients are beginning to funnel their needs for this service to us more than in the past.

Service to the Fellows. With the close of the calendar year, the coupon method of providing free service to the Fellows will be discontinued. M.D.S. offers three "no charge" hours for retrospective searches as bibliographic verification. A telephone call or letter will set in motion the required services. Copying charges related to these services will be charged at the established rate and are not part of the library free services to Fellows. A 20% discount, however, will be reflected on all authorized work in excess of the offered free service time.

Free service to the Fellows in 1972 totalled 16 hours and equalled $240 potential income to the department. The decision to revert to our previous method of providing free services to Fellows without coupons stems from a feeling that the required use of coupons was troublesome and in some cases resulted in a curtailment of their use of the service. It is our desire to ease the means by which Fellows of the College can meet their literature needs through the use of M.D.S. services, and to encourage this use. We welcome and seek your employment of our services.

Personnel. Mr. Fritz Danga, Dr. Erich Meitzner, Mrs. K. Bernice Odom, Dr. Harriet Rockwell, Dr. Daniel Turner and Mrs. Pearl Stark have continued throughout 1972 as biomedical literature scientists lending their specific skills to the scientific and technical expertise provided by the department.

Linda S. Frantz continues to coordinate the SDI services, an essential and major function of the department.

Mrs. Geraldine James, who coordinated our reference services was replaced late in the year by Mr. Lee Schwartz, as previously mentioned. An addition to the staffing of this function, Miss Judith Lough joined M.D.S. in the fall of the year.

Mrs. Elizabeth Wright in her function as data processor, was joined this year by Mrs. Leah Olanoff, to provide expanded services by the department.

The Director of M.D.S. has continued her professional activities, which provide an excellent source of contact for M.D.S. clients and functions. Her activities include

National Membership Chairman for the Special Libraries Association; member and Treasurer of the Board of Directors of Documentation Abstracts, Inc., member of the Advisory Committee of the World Data Base of the National Federation of Abstracting and Indexing Services; and 1973 Conference Chairman for the Drug Information Association, a group which constitutes a major clientele of M.D.S. services.

THREE YEAR COMPARATIVE STATISTICS

Service rendered	Jan. 1, 1970 to Dec. 31, 1970	Jan. 1, 1971 to Dec. 31, 1971	Jan. 1, 1972 to Dec. 31, 1972
Scanning references reported (SDI)	14,729	15,219	16,261
No. of SDI profiles (subjects)	82	90	80
No. of clients served in SDI	21	23	19
Abstracts			
English	2,627	2,353	246
Foreign	1,378	1,412	7,520
Total abstracts	4,005	3,765	7,766
Literature searches (retrospective)	310*	125	145
Interlibrary loans			216*
Telephone reference service (recorded by number of quests)		1,700	1,876
Telecopier Service (no. of requests)			38*
Special projects			
Data analysis		2	506**
Indexing		2	15
Photocomposition		3	5
Editing and rewriting	115	2	12
Translations		80	160
MDS Xerox photoduplication requests (associated with reference service & SDI)		4,534	17,329
MDS Data Processing Services and Photocomposition		5	6
Publications	3	1	2

* Previously reported as part of telephone service items
** No. of articles analyzed and summarized

Alberta D. Berton
Director, Medical Documentation Service

The Staff[6]

Librarian

Elliott H. Morse

Assistant to the Librarian
&
Fellows' Librarian

Mrs. Beatrice F. Davis

Library Secretary

Mildred C. Gray

Processing Dept.

Mrs. Sarah Caspari, Head

Cataloguer

Mrs. Rebecca P. Canfield

Acquisition Assistant

Josefa Serada

Catalog Grant

Mrs. Ellen Batty, Project Cataloger
Mrs. Judy Barnes, Project Ass't.

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Mrs. Rita Thomas
Richard Costello*

Paging Staff

Margot Van Rossum
Carol Clark
Veronica Convery*
Maureen Mullery
James Nolan*
Patricia Webb
Marilyn Wexler

Serials Dept.

Mrs. Marybeth Leary, Head

Serials Librarian

Matilde Zalinski

Serials Assistants

E. Naomi Frazer
Mrs. Catherine Ledwell
Donna Farcus*

Mail Clerk

Richard Mascitti

Xerox Operator

Deidre Harper

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W. B. McDaniel, 2d, Ph.D., Curator
Mrs. Lisabeth Holloway, Assoc. Curator and Historical Cataloguer
Jean P. Carr, Assistant to the Cataloger
Carolyn McAfee, Assistant for Book Preservation

Medical Documentation Service

Alberta D. Berton, Director
Linda S. Frantz, Supervisor SDI Service

Biomedical Literature Scientists

Fritz Danga
K. Bernice Odom
Harriet Rockwell, Ph.D.*
Pearl Stark*
Daniel Turner, Ph.D.

Data Processing

Leah Olanoff
Elizabeth Wright

Assistants

Lee Schwartz
Judy Lough

Regional Medical Library Program

Elliott H. Morse, Acting Director
Mrs. June Fulton, Ass't. Director of MERMLS for Document Delivery, Reference and Bibliographic Services.
Jackie Rustigian, Ass't. Director of MERMLS for Training, Consultation, publicity, and Evaluation.
Mrs. Catherine Orner, Sr. MEDLARS Analyst
Mrs. Christine Balonis, Reference Librarian
Matilde Zalinski, Reference Librarian
Ellen Frost, MEDLARS Ass't.
Andrea Jancsura, MERMLS Sec'ty
Patricia Fox, Evaluation Ass't.

Regional Photocopy & TWX Section

Joan McKenzie, Head

Assistants

Mrs. LaVern Pittman
Mrs. Janice Fisher
Carol Sapp

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* Part-time staff

[6] Library Staff list as of January 24, 1973.

Biennial Report of the Committee on the College Collections, 1971-72

1971

The year 1971 began auspiciously with the gift from Samuel B. Sturgis, M.D., of a silver pitcher (circa 1840) given to him by Henry R. M. Landis, M.D. (Figure 1). It is gratifying to note that many of the gifts came from Fellows and their families or through their efforts.

ITEMS	DONORS
Copy of oil portrait by Thomas Eakins of Matthew H. Cryer, M.D., D.D.S.	Mrs. S. Leonard Kent, Jr., via R. H. Ivy, M.D., D.D.S., Fellow
Set of dental instruments and a presentation case of Civil War instruments.	Craig W. Mucklé, M.D., Fellow
First table ballistocardiograph with a photograph and monograph. Originally built for Dr. Starr's series of cadaver experiments. Most of the important early experiments were performed on this table.	Isaac Starr, M.D., Fellow
Monaural stethescope belonging to W. Wallace Dyer, M.D.	Mrs. W. Wallace Dyer, via Miss Marie deBenneville
Giant's ring—"Jack Earl".	Theodore Hake
Colored photographic slides of the tympanic membrane from the Politzer Collection in the Mütter Museum. Photographs were taken by Charles McConnell, M.D., U.S.N.	Sylvan E. Stool, M.D., Fellow

Fig. 1.

Fig. 2.

ITEMS	DONORS
Hand painted eye cup.	M. Luther Kauffman, M.D., Fellow
18th-Century pewter drinking tube used for taking medicine.	W. B. McDaniel, Ph.D., via W. B. McDaniel, II, Ph.D.
Framed oil painting of Walter Reed, M.D. (Figure 2). Diagnostic instruments and photographs.	Claude P. Brown, M.D., Fellow, via Fred B. Rogers, M.D., Fellow
Medical medals (Figure 3) belonging to Balduin Lucké, M.D.	Mrs. Balduin Lucké, via Fred B. Rogers, M.D.

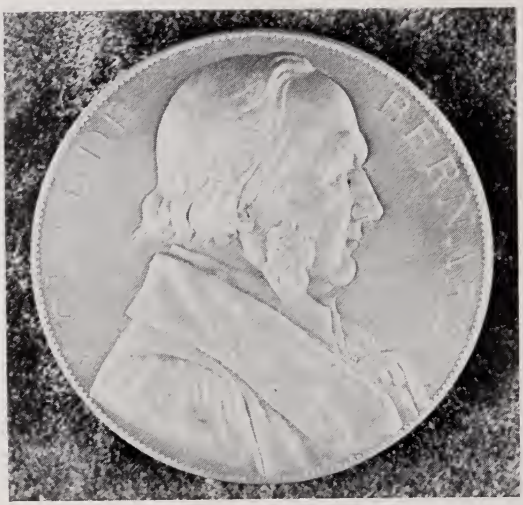

Fig. 3.

Fig. 4.

1972

In 1972, 21 persons generously donated items for possible accession. However, there were 42 items offered, because several donors were kind enough to give more than one article.

ITEMS	DONORS
One pair of double branched candelabra with dependent prisms. Hutchinson Room on mantle (Figure 4).	Dr. & Mrs. Francis C. Wood, Fellow
Gift of three wooden cabinets and five plate glass cases from 100 year old drug store of Evan Jones, pharmacist.	Mrs. Evan Jones
Framed letter written by Pres. Eisenhower to Henry Kobler, M.D., Fellow of the College.	Mrs. Henry B. Kobler
Brass scarificator and silver case with four lancets.	Samuel B. Sturgis, M.D., Fellow
Apothecary scale and four surgical instruments.	Craig W. Mucklé, M.D., Fellow
Set of male urethral sounds purchased in London by the donor.	Craig W. Mucklé, M.D., Fellow
Platinum chemist's crucible with gold soldered rim and pouring spout (Figure 5).	M. Prince Brigham, via Fred B. Rogers, M.D.
Medal—Bicentennial of Medical Education, 1965.	Marilyn Hess, Ph.D.
Two pairs of 18th-Cent. spectacles worn by Christopher Heydrick, M.D., and photograph of a picture of Dr. Heydrick.	Miss Louise Heydrick, great, great, granddaughter.

Fig. 5.

Embroidered spectacle case from China, and a Staffordshire plate depicting "Sairy Gamp," infamous midwife in *Martin Chuzzlewit*.	Mrs. Elizabeth M. Moyer
Chiming mantle clock.	Mrs. Charles Rupp, Jr., widow of Charles Rupp, Jr., M.D., Fellow
Early slit lamp used by Alfred Cowan, M.D., deceased Fellow.	Thomas H. Cowan, M.D., Fellow, son of Alfred Cowan, M.D.
Framed copies of caricatures of Charles Darwin, Rudolf Virchow, and Thomas Huxley.	Irvin Hermann, M.D.
Framed, autographed, photographs of Robert Daland and Robert Koch, and framed print of Ramazzini.	Claude P. Brown, M.D., Fellow
Small child's leg brace worn by sister of donor at end of 19th Century.	Miss M. Ruth Opperman
Pasteur Commemorative Medal in silver. This medal was sponsored by the College to honor Louis Pasteur on the Sesquicentennial of his birth, 1972.	Katharine R. Sturgis, M.D., Fellow
Framed autographed photograph of I. S. Ravdin, M.D., deceased Fellow.	Katharine R. Sturgis, M.D., Fellow
A Jarcho Pressometer—a manometer used in obstetrics.	Fred B. Rogers, M.D., Fellow
A packet of instant ginseng for the oriental medicine exhibit.	Fred B. Rogers, M.D., Fellow
Bronze medal—100th Meeting of the American Public Health Association in Atlantic City, November 12–16, 1972.	Fred B. Rogers, M.D., Fellow
Apothecary scale in a wood and glass case from the pharmacy of D. Elvin Rosenberger, Havertown, Pa. About 50 years old.	Mrs. D. Elvin Rosenberger

ITEMS	DONORS
18th-Century, hand-forged, spectacles with case, from William Rowden, F.R.C.S., Devon, England.	Harold D. Barnshaw, M.D., Fellow
Articles from apothecary shop of Frank E. Morgan and Sons, formerly located at 1629 Walnut Street. 1. 3 photographs of interior of shop. 2. Nickel and silver case of hypodermic needles. 3. Boar-bristle toothbrush made in Kent, England, with Morgan & Sons stamped on handle. 4. Dark amber bottle with the mark, Frank E. Morgan & Sons, Philadelphia. 5. 2 bottle caps stamped with monogram and name of Frank E. Morgan & Sons. 6. One double nasal tip which could be attached to any De-Villbis Nebulizer.	Richard P. Metcalf, Morgan Apothecaries, John Wanamaker, 13th & Chestnut Sts., Philadelphia.
Colored photograph of John F. Huber, M.D., to be placed with exhibit on bronchial tree.	John F. Huber, M.D., Fellow
Slides, photographs, and reprints—neoplastic cells—human granulocytic leukemia, "Philadelphia chromosome."	Peter C. Nowell, M.D. and David A. Hungerford, Ph.D.
Stamped brass plate with inscription, "*Mütter Museum*", for front door of the College Building.	Dr. & Mrs. William S. Blakemore

Gonzalo E. Aponte, M.D.
Chairman

List of College Lectures, 1972

5 January 1972

SMALL, DONALD M. The Basis of Gallstone Formation (54th Nathan L. Hatfield Lecture)

1 March 1972

KOTIN, PAUL. Epidemics of the Future (4th Theodore F. Bach Memorial Lecture; *Transactions & Studies,* October, 1972)

5 April 1972

TERRY, LUTHER L., HOWELL, DORIS A., CLELAND, JAMES A., ROBITSCHER, JONAS. The Right to Die (Mary Scott Newbold Sponsored Symposium)

3 May 1972

L'ETANG, HUGH J. C. J. Diseases, Decision-Makers and Doctors (9th Hira S. Chouke Lecture; *Transactions & Studies,* July 1972)

4 October 1972

SCHWARTZ, HARRY. Medicine Through Non-Medical Eyes (102nd Mary Scott Newbold Lecture)

1 November 1972

HERRNSTEIN, RICHARD J. I.Q.: Social Goals and the Genetic Heresy (55th Nathan L. Hatfield Lecture; *Transactions & Studies,* April, 1972)

6 December 1972

GOOD, ROBERT A. Immunology and Organ Transplant (81st Thomas Dent Mütter Lecture)

Transactions of the Sections

SECTION ON INSURANCE MEDICINE

12 April 1972

Prospects for National Health Legislation. Robert J. Myers, Ph.D.

14 November 1972

Current Diagnostic Uses of Coronary Arteriography. Richard H. Helfant, M.D.

SECTION ON MEDICAL HISTORY

22 March 1972

Teaching History of Medicine—New Approaches. Albert S. Lyons, M.D. (Kate Hurd Mead Lecture XXIII)

10 October 1972

The Pediatrics of Benjamin Rush (1745–1813). Samuel X Radbill, M.D.

Thomas U. Walter (1804–1891) and the Architecture of Medicine. Robert B. Ennis.

Dr. Peter Pineo (1825–91): Cape Cod Surgeon. Fred B. Rogers, M.D.

11 December 1972

Ritual Contamination in the Torah and Modern Hygiene. Rabbi Ivan Caine.

Dr. Elisha Kent Kane, Arctic Explorer, and his Bestselling Book. George W. Corner, M.D.

SECTION ON OPHTHALMOLOGY

20 January 1972

Bleb Tamponades in Glaucoma Surgery. Richard J. Simmons, M.D.*

17 February 1972

The Elastotic Nature of Hyaline Corneal Deposits. Seymour L. Brownstein, M.D., Merlyn M. Rodrigues, M.D., Ben S. Fine, M.D., and Ernest N. Albert, M.D.

Tissue Typing in Penetrating Keratoplasty. James A. Katowitz, M.D., Walter Haesler, M.S.

The Importance and Accuracy of Water-Drinking Test and Tonography. Zarko M. Vucicevic, M.D., Harold G. Scheie, M.D., Arnold Berry, B.A. Christopher Fraunhoffer.

Intrascleral Glaucoma Filtering Procedure. David B. Soll, M.D.

The Diagnosis and Management of Intra-Ocular Foreign Bodies and Associated Retinal Injury and Detachment from the Vietnam Conflict. Randall W. Bell, M.D.

16 March 1972

Unusual Degenerations of the Cornea. Frederick C. Blodi, M.D.*

20 April 1972

Retrolental Fibroplasia. William Tasman, M.D., David B. Schaeffer, M.D. and Arnall Patz, M.D.

16 November 1972

The Therapeutic Tumult and the Ophthalmologist. Irving H. Leopold, M.D. (The Thirty-Fifth Annual DeSchweinitz Lecture)

SECTION ON OTOLARYNGOLOGY

19 January 1972

Microscopic Laryngoscopy. Jerrie Cherry, M.D.

15 March 1972

Carcinoma of the Vocal Cord. James R. Leonard, M.D.

Neuro-Otologic Diagnosis in Vestibular Disorders. Max Lee Ronis, M.D.

15 November 1972

Correlation. Vincent J. Hyams, M.D., and Gabriel F. Tucker, Jr., M.D.

* By invitation

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Vice-President

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Francis C. Wood

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George I. Blumstein
Richard A. Kern

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To serve until July 1973

Fred B. Rogers
Edward S. Cooper

To serve until July 1974

Mary D. Ames
Charles Fineberg

To serve until July 1975

Luther W. Brady
John H. Hodges

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The forenamed and the chairmen of the Standing Committees*

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1970	English, Thomas J.	1902–1972
1953	Fruchter, Joseph M.	1888–1972
1965	Gould, R. John	1929–1972
1943	Hitschler, William J.	1904–1972
1938	Lindauer, M. August	1906–1972
1907	Lodholz, Edward	1875–1972
1951	MacNeish, William Jack	1904–1972
1939	Miller, Merle M.	1903–1972
1970	Nichols, Henry T.	1920–1972
1926	Ravdin, I. S.	1894–1972
1956	Ravdin, Robert G.	1923–1972
1951	Rentschler, Laurence B.	1910–1972
1936	Steinfield, Edward	1936–1972
1928	Stokes, Joseph Jr.	1896–1972
1943	Stokes, S. Emlen	1894–1972
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